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Modern Use of Urinary Antiseptics

FRANK HINMAN, JR., M.D., *San Francisco*

SUMMARY

It is not necessary to resort to complete study in most cases of urinary tract infection. However, if the lesion is chronic or recurrent, associated with mixed organisms, complicated by lower tract involvement, accompanied by low total renal function, with or without abnormalities in a kidney-ureter-bladder x-ray film or in an intravenous urogram, then complete retrograde study should be carried out.

A Gram stain will substitute for culture in most simple urinary tract infections and a trial of the agent of choice will act as a test of bacterial sensitivity. If the infection persists, however, more adequate bacteriologic studies are required.

For good chemotherapeutic practice, it is important to: (1) Withhold the drug until it has been determined that obstruction, stone or other such lesion is not present; (2) watch for side effects and toxicity; and (3) give the best drug in large enough dosage for an adequate period of time.

NOW that there are at hand chemotherapeutic agents potent against specific bacteria and techniques are available for identification of the infecting organism and determining the site of infection, it would seem possible to reduce the treatment of infectious disease of the urinary tract to a simple formula such as: Patient × bacterium = chemotherapeutic agent.

But the inconvenience and expense of complete urologic and bacteriologic study prevent its application in most cases, and the variability of the reaction of host to organism and of organism to agent make direct application of a formula impractical. However, by evaluating each of these variables in turn it is possible to arrive at a rational plan for everyday therapy in urinary tract infections.

Assistant Clinical Professor of Urology, University of California School of Medicine.

Read before the Joint Meeting of the Sections on General Practice and Urology at the 80th Annual Meeting of the California Medical Association, Los Angeles, May 13 to 16, 1951.

THE PATIENT

At some point in the examination of a patient, the physician must decide upon either immediate trial of chemotherapy on a symptomatic basis to be followed by more complete study if the treatment is ineffective, or more or less complete urologic study.

Certain non-instrumental steps have been found very useful in arriving at presumptive evidence for or against simple infection which would respond to a suitable agent.[26] As noted in Table 1, a history of chronic or recurrent infection, the presence of mixed organisms in the urine, the detection of associated lower tract disease, the palpation of a renal mass, the determination of decreased renal function by phenosulfonphthalein (PSP) test, and the visualization of abnormalities on the kidney-ureter-bladder x-ray film or in an intravenous urogram, make retrograde study necessary. In addition, diabetes for example would, if uncontrolled, make cure of the infection very hard. And it must be remembered that poor renal function as indicated by inadequate PSP

TABLE 1.—*Appraisal of Diagnostic Data in Determining Treatment of Disease of the Urinary Tract*

Presumptive Diagnostic Steps	Indications for: Simple Antibiotic Therapy	Indications for: Further Urologic Study (Usually retrograde study)
1. History and 2. Physical examination	Acute, non-recurrent, uncomplicated	Chronic, recurrent, complicated
3. Urine	Single organism	Mixed organisms or leukocytes only or erythrocytes or tubercle bacilli
4. External genitalia	Normal	Urethritis or epididymitis
5. Rectal examination	Normal prostate gland	Enlargement of prostate gland or prostatitis
6. Renal palpation	No mass	Mass
7. Renal function (PSP)	Normal	Depressed
8. Kidney-ureter-bladder film and intravenous urography	Normal	Stone, dilation or deformity
And Trial of Antibiotic Therapy	Success	Failure

excretion, prevents good concentration of the agent by the kidneys.

After trial of a selected agent in a presumably simple case without clearing of the infection, instrumental diagnostic steps are necessary since the failure must be interpreted as evidence of the presence of complicating abnormalities; conversely, structural abnormality of the urinary tract prevents effectiveness of antibacterial agents.

Use of the non-instrumental, presumptive steps is more valuable than bacterial identification or measurement of the sensitivity of the organism to chemical agents.

THE ORGANISM

Relatively few kinds of organisms are observed in cases of urinary infection. Rods may be assumed to be B. coli-aerogenes, and cocci probably staphylococci if instruments or catheters have not been used. After operation or instrumentation, Proteus and Pseudomonas (B. pyocyaneus) may be found in addition among the rods, and streptococcus fecalis (enterococcus) among the cocci.[49] It is obvious, therefore, that a routine methylene blue smear is adequate for bacterial identification in most cases. The exceptions would be in prolonged, stubborn infections which do not respond to simple chemotherapy. In such cases culture, and often determination of sensitivity is necessary. It is cheaper and easier to give even a relatively expensive agent for a short time on trial than it is to send a specimen for culture.

At the risk of repeating the obvious, the importance of the proper collection of the specimen must be stressed. A specimen obtained during a remission is of little value. A specimen is best obtained by the physician himself so that he can be sure contamination is eliminated. For men, a three-glass specimen, and for women a catheterized specimen, is essential. After centrifugation, the number of leukocytes (and erythrocytes) is estimated. Often when a slide is being examined for this purpose, motile bacteria may be observed if the light from the substage is reduced. Whether these are seen or not, the slide is air-dried, fixed by heat, stained with triple-strength methylene blue, and examined under the oil immersion lens for rods or cocci.

This technique of the direct smear should be carried out in every case, whether a culture is to be obtained or not. It has the advantages of giving the results immediately, without the possibility of contamination or overgrowth, and establishes at once the number of organisms. It is cheap and convenient, and hence invaluable for clinical work. Culture, on the other hand, while inconvenient and relatively expensive, will positively identify the organism, and will allow sensitivity tests if they are needed. The use of the pour plate avoids overgrowth and permits accurate estimation of the degree of infection. Culture is valuable in determination of the treatment in complicated cases. Sensitivity tests are less often used, and should be reserved for cases which are chronic, recurrent or severe.

Determination of the pH of the urine will help identify the resistant urea-splitting organisms, such as Pseudomonas, staphylococcus and alkaligenes, and will also suggest acidification as part of the treatment.

THE AGENT

The new drugs derived from molds in the last few years finally permit treating urinary tract infections rationally and with expectation of success. However, some of the older compounds are of value in certain cases and for special reasons.

Methenamine, with acidifying agents, can be given intermittently for long periods without toxicity at relatively low cost. It, and methenamine mandelate,[56] are especially useful in long-standing infections in which permanent sterilization cannot be expected because an obstruction, stone, or catheter cannot be eliminated.

The sulfonamides,[57] while comparatively toxic and often less effective than the newer antibiotics, are still of value in treating urologic disease because of their low cost and ease of administration. They might not be used if immediate sterilization was desired, but are a useful adjunct to therapy after prostatectomy and for prophylaxis for cystoscopy and retrograde study. Gantrisin® [7, 8, 32, 39, 55, 58, 59, 60, 68] is promising in B. coli and Proteus infections.

The true antibiotics which are clinically useful may be separated into three groups:

1. Penicillin, still the best agent for its particular purpose, is non-toxic and indicated in coccal infections. It acts against growing cells (bacteriocidal). If it were used in doses comparable to those in which the other antibiotics are given, it would be even more effective.

2. Streptomycin and dihydrostreptomycin,[3,18,62,69] because of the common occurrence of bacterial resistance to them, are now less and less frequently used except for tuberculosis. They act by inhibiting an enzyme involved in the carbohydrate metabolism of the cell (bacteriostatic). They may have a place in sterilization of the bowel when given orally, and in the treatment of severe infections which have not responded to other agents.

3. Aureomycin,[2, 6, 10, 50, 51, 70] chloramphenicol[9, 19, 24, 25] and Terramycin®[4, 34, 40, 53] are similar in antibacterial and other properties.[41] In fact, it may be that chloramphenicol (which has been synthesized) is merely an active portion of the large Terramycin molecule. Because of their low toxicity and wide range of effect, and in spite of their cost, these drugs increasingly supplant the other agents in daily use against urinary tract infections. They are also useful for preoperative bowel preparation.[11,12,13,14] Polymyxin,[47, 54] while somewhat toxic, may prove useful in resistant infections.[23, 30] Neomycin[43, 65, 66] may be too toxic for clinical use, although some of the toxic reactions are reversible.[29] Neomycin, which is similar in action to streptomycin, is of use instead of that drug in Pseudomonas or in resistant-coli infections. The author agrees, however, with Hayes[23] that the "use of a drug known to be toxic seems to be justified until such a time as a less toxic effective drug is available."

Aside from availability and cost, the selection of an antibacterial agent will depend on its actions against the host as well as against the organism responsible for the disease. Certain fundamental principles control these actions:

Absorption and Excretion

Dosage requirements depend on the rate of absorption and excretion, as well as on the rate of inactivation and the extent of binding of the agent to the plasma proteins. The sulfonamides, for example, are well absorbed orally but are excreted rapidly by the kidneys, hence must be given every four to six hours (0.5 gm. to 1.0 gm.) to maintain adequate levels. Penicillin, in contrast, is poorly absorbed orally and is destroyed in the gastrointestinal tract. Given intramuscularly, it produces a high blood level with rapid renal excretion. More useful is the daily or twice daily administration of procaine penicillin in aqueous solution (300,000 units),[46] with added crystalline penicillin for its immediate effect, which gives prolonged adequate blood levels. In urologic practice, a tubular blocking agent such as carinamide is not given because often it is desirable to have a high concentration of the drug in the urine. Besides, as penicillin is not expensive or particularly toxic, it can be given in large doses without the necessity of blocking tubular excretion.

Streptomycin is neither absorbed from nor destroyed by the gastrointestinal tract, which makes oral administration of it practical for sterilization of the bowel before transplantation of the ureters. When streptomycin is given intramuscularly, the level in the blood falls due to renal excretion, but at a slower rate than penicillin, so that doses (0.25 to 0.5 gm.) may be spaced at six to eight hour intervals. One gram may even be given once daily. Aureomycin,[20, 48, 52] chloromycetin, and Terramycin are readily absorbed when given by mouth, and are not destroyed by digestive activity. Part is excreted by the kidney but most is destroyed by the body. Doses of 0.25 to 1 gm. every six hours give satisfactory levels. Polymyxin is given intramuscularly or intravenously in doses of less than 4 mg. per kilogram of body weight.

A question of fundamental importance to the urologist has yet to be answered: Should one aim at an effective tissue dose or merely at an effective urinary dose? The urinary dose is easily reached because of tubular concentration of the drug. At one extreme are the chronic low-grade infections associated with urinary stasis (vesical diverticulum, atonic bladder, advanced hydronephrosis). These should be treated with urinary levels of drug, and for them the older, slow-acting compounds (methenamine, mandelic acid) may be effective. At the other extreme are the fulminating renal infections, clinically and pathologically parenchymal, and so best treated by tissue levels of the antibiotic. Between these poles lie the majority of urinary tract infections. It is probably better to lean toward the higher, tissue level, especially in the trying cases of chronic pyelonephritis.

Toxicity

The principal limiting factor in the use of chemotherapeutic agents is toxicity, which may be either dose-related or due to sensitivity. With sulfonamides, for example, both forms may occur. Crystalluria and toxic nephrosis[22, 38] are principally dosage phenomena and can be avoided by limiting the quantity of drug administered or by changing the pH, whereas fever, leukopenia, and skin rash are sensitivity reactions, occurring after even small doses if the drug has been given before. Late effects include periarteritis nodosum, but this is a rare complication in the author's experience. The "triple-sulfa" preparations were designed to avoid dose-related toxicity by providing smaller amounts of the individual drugs. However, the chance for toxicity from sensitization is thereby increased. In addition, the physician will be restricted in changing to another sulfonamide, since the clinically valuable ones are included in the combinations.

Methenamine and mandelic acid are relatively non-toxic. However, if the former drug is given over a long period of time, irritation of the uroepithelium with hematuria may occur. Both drugs, especially when given with acidifying substances, may be poorly tolerated by the stomach.

Penicillin may be given in very large doses (it

TABLE 2.—*Values and Limitations of Various Chemotherapeutic Agen*

	Methenamine with Ammonium Nitrate	Mandelic Acid & Mandelamine	Sulfadiazine, etc. Gantrisin®	Penicillin
Toxicity or side effects	Low, occasional gastritis or cysto-urethritis	Low	a. Crystalluria b. Toxic nephrosis	Low (sensitivity)
Resistance	Unknown	Unknown	Rare	Rare
Absorption	Complete	Complete	Good	Good
Excretion	Complete, effective only in urine of pH5 or less	Complete	Moderate rate (acetylation)	Rapid rate
Synergism	Unknown	Unknown	?, with methylene blue	Adversely with chloromycetin and streptomycin
Dose in grams and average duration of treatment	1 QID × 6+	.75 QID × 6+	0.5—1 QID × 5	400,000 u. × 6
Approximate cost per day, dollars	.25	.30	.12 - .44	1.30
Total average cost, dollars	1.50	1.80	.60 - 2.20	7.80
Uses	Chronic infection with stone or retention	Chronic infection with stone or retention	General use, relatively cheap	Coccal infections

is still not administered in doses comparable to those for aureomycin, etc.) without dose-related toxic effects. But in one patient in 20, rash, hives or fever appear, representing sensitivity phenomena.[67] Streptomycin, in contrast, does not produce sensitization, but has pronounced toxic effects upon the eighth nerve and kidneys related to both dosage and duration of treatment. Dihydrostreptomycin, however, is somewhat less toxic.

Aureomycin[35, 42] and chloramphenicol are fairly non-toxic. Nausea and vomiting may occur with aureomycin from gastric irritation. Aluminum gels, administered to prevent this, act by adsorbing the drug. Milk, however, is effective. Terramycin causes diarrhea[5] and transient nausea only.[15] Polymyxin has dose-related toxic effects upon the kidneys and the central nervous system, which usually clear, however, after cessation of therapy. Neomycin has dose-related ototoxicity and nephrotoxicity,[64] which limits its clinical use.

Most of these antibiotics alter the bacterial flora of the bowel, with great diminution in vitamin absorption,[17] but these effects are not prolonged.[1] Monilia may take over when the normal flora have been so depleted, resulting in distressing proctitis.

Synergism

The purposes of using combinations of drugs are: (1) to attain rapid control of the infection, (2) to decrease the development of resistance, (3) to decrease dose-related toxicity, and (4) to prevent superimposition of infection.[16, 44, 45] Clinically, drug combinations are indicated for fulminating infections, infection by relatively resistant organisms, chronic or recurrent infections, acute infections in which the expected response is not obtained within 48 hours, and of course in mixed infections.

The mechanisms through which drug synergy is obtained are poorly understood. Sulfathiazole has been shown to be potentiated by methylene blue, presumably by an effect on cell respiration. Cobalt experimentally enhances the effect of penicillin, but this finding as yet has no clinical significance. Streptomycin has been found to remove strains which would be able to adapt themselves to sulfonamides administered simultaneously. However, Jawetz and co-workers recently reported that chloramphenicol plus penicillin is less effective against streptococci than either drug alone.[21, 27, 28] In theory, effective synergy is possible between drugs because, as each apparently affects a specific metabolic route in the organism, the combination can block the alternative, adaptive route by which the bacterium would establish resistance by mutation.[31, 61]

An aspect of synergism is demonstrated in the attempts to achieve prophylaxis against infection by drug administration. In repressing bacteria of one kind, a drug may thereby reduce normal ecologic restraints upon other, previously inhibited bacteria, permitting them to multiply and become pathogenic. A similar disturbance of balance has been noted in mixed infections when streptomycin eradicates the rod forms and leaves the resistant cocci to spread. Another objection to the use of drugs prophylactically is that they usually are given in such small doses that organisms have a chance to develop resistance. Recent work by Marshall[37] demonstrated the futility of such practice for infections associated with prostatectomy. However, with a single exposure to introduction of infection, as with urethral instrumentation, prophylactic chemotherapy may be worth while, especially in patients with valvular heart disease.[33]

Agents in Treatment of Urinary Tract Infections

Streptomycin Dihydrostreptomycin	Aureomycin	Chloramphenicol	Terramycin
8th nerve and kidney	Nausea and vomiting; diarrhea and proctitis; rash	Nausea and vomiting; diarrhea and proctitis; rash (aplastic anemia)	Nausea and vomiting; diarrhea and proctitis; rash
Common	Not usual	Not usual	Not usual
Complete except orally	Complete	Complete	Complete
Moderate rate, best effect in alkaline urine	Moderate rate, acid urine	Moderate rate, acid urine	Moderate rate, acid urine
Adversely with penicillin	Not known	Not known	Not known
0.5 Q6H × 3	0.25 Q6H × 5+	0.25 Q6H × 5+	0.25 Q6H × 5+
4.00	2.50	2.50	2.50
12.00	12.50	12.50	12.50
Resistant organisms, without obstruction or stone	General, bacillary infections	General, bacillary infections	General bacillary infections

Resistance

Antiseptics act grossly by coagulating the cell membrane (of the host as well as the bacterium), whereas the antibiotics affect cellular protein anabolism of growing organisms, often in a highly specific manner,[36] giving them a high chemotherapeutic ratio, measured by the degree of parasitotropism over organotropism. Correspondingly, since these agents act only on metabolism, it is very difficult to distinguish bacteriostatic from bacteriocidal actions. The usual action of antibiotic agents is inhibitory in lower concentrations and lethal in higher ones.

Some species or strains are naturally resistant, having metabolic pathways that are not affected by the drug. In interesting contrast is streptomycin to which few species are primarily insensitive. However, this is a disadvantage, since this substance destroys the normal, sensitive flora and permits growth of resistant species and strains.

Other strains may become resistant during exposure to the drug, due to the development, through mutation, of alternative metabolic pathways. This can be circumvented in part by giving enough drug to eliminate all organisms at once, or by using several drugs which affect different cellular functions to eliminate the chance of simultaneous mutation. Voureka[63] noted bizarre bacterial forms in culture of urine after the urine appeared sterile with chloramphenicol therapy. Some of these non-pathogenic variants bred true in subculture, but eventually returned to normal. He felt that the injury to the cell by the agent caused genic change and hence mutation. Of course, these mutants may be the cause of relapses.

Probably of greater importance in recurrent urinary tract infection, especially with an obstructive element, is reinfection from organisms in the bowel[31] or reintroduced from the urethra and bladder.

PRACTICAL APPLICATIONS

Since the practicing physician cannot keep in mind at all times the many published facts as to the value and limitations of each antibiotic, the data have been assembled in Tables 2 and 3. Such tabulations have inherent limitations of course. First, often it is impractical or uneconomic to exactly identify the organism. Second, strains of the same organism vary in susceptibility; or a second organism may enter. Third, more experience with the newer drugs may change present concepts of specific uses of them. And lastly, effectiveness of a specific drug may be severely limited by associated lesions of the urinary tract, as for example, obstruction or stone.

Certain bacterial infections are treated best by certain agents. Examples are: penicillin for coccal infections (excepting streptococcus fecalis); Terramycin for Pseudomonas infections; and chloramphenicol for Proteus. Less certain is the superiority of aureomycin for aerobacter infections, but these generalizations may be of some help in choosing the best drug.

For practical purposes, the majority of patients who need treatment for infection in the urinary tract fall into the following categories:

1. *Cystitis with simple pyelonephritis,* especially in the female. Gram-negative organisms, usually B. coli, are the pathogenic agents and sulfadiazine or Gantrisin is usually effective. If not, use of aureomycin, chloramphenicol, or Terramycin, although more expensive, is indicated. If these drugs are ineffective, further study and instrumental therapy are needed.

TABLE 3.—*Effectiveness of Various Sulfa Drugs and Antibiotics Against Organisms Causing Disease of the Urinary Tract*

Organism	Methenamine or Mandelamine	Sulfadiazine Sulfamerazine	Gantrisin	Procaine Penicillin	Streptomycin Dihydrostreptomycin	Aureomycin	Chloramphenicol	Terramycin
Bacillus coli	+	++	++	±	++	++	++	++
Aerobacter aerogenes	+	+	+	±	+	* ++	+	++
Pseudomonas aeruginosa (B. pyocyaneus)	0	±	+	0	±	±	±	* +
Proteus vulgaris	0	±	* +	0	+	±	* +	0
Staphylococcus	±	+	±	* +++	+	++	+	++
Streptococcus fecalis	±	±	±	+	0	++	* ++	++

+++ Usually curative or suppressive (in over 75%) (Unless strain is resistant or abnormality of urinary tract is present)
++ Often curative or suppressive (in 50-75%)
+ Occasionally curative or suppressive (in 25-50%)
± Seldom curative or suppressive (in less than 25%)
0 Ineffective
* Drug of choice

2. *Recurrent (chronic) pyelonephritis* may be caused by any of the common organisms. After obstructive or calculous disease are ruled out, culture and determination of the sensitivity of the organism are carried out, and chemotherapy begun accordingly. A general rule is to over-treat.

3. *Prophylactic chemotherapy* in preparation for retention catheterization or for prostatectomy is ineffective. The invasive infection is treated if it occurs.

4. *Postoperative chemotherapy.* Depending on Gram stain reaction, postoperative infection should be treated fully with the drug of choice (from Table 3). After prostatectomy, urinary sterilization ought not be attempted until discharge of blood and pus has cleared.

5. *Fulminating renal infection.* Treatment should be started with the apparent drug of choice (from Table 3). If the drug fails, urine and blood culture should be carried out for determination of sensitivity.

University of California Hospital, San Francisco 22.

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The Medical Aspects of Civil Defense in California

JUSTIN J. STEIN, M.D., *Los Angeles*

SUMMARY

Medical care for persons injured in atomic bomb attack or other far-reaching enemy action occupies an important place in civil defense plans that have been set up in California.

Preparations have been made on the basis of suppositions as to where attacks might occur and estimates of the number of casualties.

State and federal funds have been allocated for aid station equipment, antibiotics, plasma, blankets and litters.

In the table of organization, use of all physicians, nurses and hospitals in the state is contemplated. Communities at the center of attacks would borrow facilities and medical personnel from areas not directly affected.

County medical societies in California have appointed civil defense committees to work out local plans. Each physician has a part in these plans. If he does not know what his assignment is, he ought to get in touch with his county medical society headquarters immediately.

IT must be assumed that man is destined to live in a state of continued conflict. Therefore, plans and preparations must be made against wars which suddenly break upon us without warning or which follow a series of so-called "incidents."

We no longer live under such favorable conditions as existed in the past, namely, a vast ocean between us and our enemies and the fact that allies would combat the enemy while we were allowed to prepare for war.

In the future, because of the tremendous advances in aviation, submarines, guided missiles, and other weapons of destruction the civilians of this country may be the first targets and may even suffer greater casualties than our armed forces. In fact, it may even be safer to be a member of the armed forces than to live in a critical target area. The enemy will be able to bomb our cities just as we will be able to bomb his cities.

Civil defense plans and preparations are as important as are those of the armed forces. Each requires the other to survive and both are a direct responsibility of the Federal government. It has been said that the new Secretary of Defense, Robert A. Lovett, is of the opinion that civil defense is the fourth arm of the Defense Department and on a par with the Army, Navy, and Air Force. If such be the case, then civil defense will proceed more rapidly than it has in the past.

Civil defense is here to stay and must become a part of the daily life of every man, woman, and child in this country. It is disheartening to note that the public enthusiasm for civil defense increases and decreases with the headlines in the newspaper. This is understandable in a public which reads of waste of tremendous sums of our money overseas and of the apparent lack of interest in Congress in appropriating adequate money and encouraging civil defense. The public must demand of its congressional representatives that something be done about it if we are to survive as a free people. An enlightened and prepared America will effectively combat any war waged against her.

The appraisal of the over-all situation and of the need for urgency in civil defense preparations is a direct responsibility of the Federal government and we must depend upon the appraisal as given us. To date, considerable confusion exists, as is indicated in the wide divergence of opinions coming from key government officials regarding the urgency for civil defense. In the event of enemy action the problem of supplies, equipment, and materials beyond the first few hours must be a Federal responsibility. There must be a central purchasing authority and essential supplies must be stockpiled at once and distributed to the critical target areas. Only essential supplies should be stockpiled, for it is impossible to provide for every conceivable emergency. It would be easy to bankrupt us all if we attempted to cover everything. Loose thinking, such as the provision for elaborate bombproof shelters, must be eliminated. This would be a waste of critical materials and a tremendous loss of manpower hours.

No one can question the need for civil defense. We have only to study the great mistakes made by Germany and Japan in assuming that they would never be invaded from the air. They suffered tremendous and unnecessary casualties through lack of preparation and organization. Great Britain began civil defense training and organization in 1935 and would not have survived without it. The number of casualties at Hiroshima would have been greatly reduced if the city had been prepared.

DEVELOPMENT OF CIVIL DEFENSE IN CALIFORNIA

Some of the outstanding principles for good civil defense are as follows:

1. Effective, adequate legislation.
2. Self-help and mutual aid.

Read at the Medical Civil Defense Conference given by the American Medical Association, Chicago, Illinois; November 9, 1951.

The author is Chairman, Committee on Military Affairs and Civil Defense, California Medical Association; Chairman, Governor's Citizens Advisory Committee on Medical and Health Services (California).

3. Organization.

4. Education (enlightenment of the public and the medical profession).

5. Assignment of capable, interested persons to do the job.

California is fortunate in that excellent legislation has been provided for civil defense. In 1929, the California Legislature passed an act creating a State Emergency Council (Chap. 662, Statutes 1929) whose duty it was to prepare a general plan for the meeting of any great emergency occurring in the state, such as floods, fires, tornadoes, earthquakes, pestilence, et cetera. Some of the major cities took action to provide for disaster councils and to lay the groundwork for a disaster plan. Others soon followed this example.

In 1941 the Division of State and Local Cooperation of the National Defense Advisory Committee to the Council of National Defense requested the State to provide legislative authority for a Council of Defense; the Legislature on this recommendation created the California State Council of Defense Act (Chap. 561, Statutes of 1941).

The California Legislature passed the State War Powers Act (Chap. I, First Extraordinary Session, 1943) in January 1943. This statute, known as "The California War Powers Act," defined the duties and responsibilities of the state and its political subdivisions with respect to civil defense.

On June 25, 1945, the California Legislature filed with the Secretary of State the California Disaster Act (Chap. 1024, Statutes of 1945) which became effective September 15, 1945. This has proved to be a noteworthy action since it preserved the benefit of the experience gained and maintained a statewide organization to meet emergencies. The title and some of the principles of the 1941 act were changed, but the basic principle of the entire state functioning as a unit to protect lives and property was continued under the "California Disaster Act." The Governor and his staff were given the duties and powers of the California State War Council and of the State Council of Defense.

During the period from 1945 until the outbreak of hostilities in Korea on June 25, 1950, more than 200 cities and 45 counties adopted ordinances providing for "accredited disaster councils" as called for in the Act. Thus California was better prepared than most states to resume civil defense activities.

In January 1950 the aircraft observers system was instituted in California by the Federal Government. Twelve key centers were established in the state and about 600 posts were located. On July 7, 1950, only a few days after the Korea hostilities began, Governor Warren established the California State Civil Defense Planning Board, composed of the heads of all state departments and the chairmen of the advisory committees which had been in existence for a period of five years under the California Disaster Act. In September 1950 the Legislature passed the Civil Defense Act of 1950.

Governor Warren called a meeting of the governors of the three Pacific Coast states. With General A. C. Wedemeyer, who was commanding general of the Sixth Army, they met and discussed civil defense in California and the western states. General Wedemeyer agreed to send three competent training and planning officers to each state to assist in setting up the civil defense program. During September and part of October 1950, the three officers assigned to California assisted in the formulation of the civil defense plans and organization for the state. They were of great help.

In October 1950, Major General Walter M. Robertson, U. S. Army (retired), former deputy commander of the Sixth Army under General Wedemeyer, accepted appointment as the California State Director of Civil Defense. General Robertson has been very active in civil defense and has an organization of over 100 persons.

During the 1950 and 1951 sessions of the Legislature all laws with regard to civil defense recommended by Governor Warren were enacted, which brought the California statutes relative to civil defense into conformity with every recommendation of the Federal government. Master mutual aid agreements, model ordinance for city and county, shelter liability, rescue and first aid, workman's compensation benefits for volunteers, loyalty oath, et cetera, were covered in the statutes.

MEDICAL CIVIL DEFENSE FUNDS

A total of $12 million was appropriated by the 1951 session of the Legislature for the State Civil Defense Program and, in addition, $75 million was earmarked as available for emergency needs in the event of an atomic attack. Of the $12 million, the amount set aside for the purchase of medical and health supplies was $3,167,000, provided the Federal government would contribute $2 million for matching purposes. This would provide a total of $5,167,000.

To date these monies have been expended as indicated below:

Requisitions placed with the Federal Civil Defense Administration on FCDA forms Number 103, dated July 12, 1951:

Request No. 1, Aid Station Equipment	$ 333,135.00
Request No. 2, Antibiotics	82,000.00
Request No. 3, Plasma	1,003,756.00
Request No. 4, Blankets	250,000.00
Total	1,668,891.00
Transportation (5 per cent of above total)	83,444.55
	1,752,335.55
Litters to be manufactured by California correctional institutions at $14.25 each	356,250.00
Total all matched funds	$2,108,585.55

This would leave a balance of $3,056,414.45 for expenditure. This balance consists of $1,166,000 free monies since $1,000 of the free fund had been expended for the purchase of a single sample aid station to be used in studying unitizing procedures and packaging. Matching funds of this balance consist of $1,889,414.45, of which $1,044,000 has not been

previously encumbered. The balance of this money consists of surpluses from the original allocations resulting from the lower prices obtained by purchasing locally or changes in price quotations. In addition, it is proposed by the Division of Medical and Health Services to use approximately $30,000 for purchase of penicillin to supply aid stations. This money will come from the $1,166,000 balance of free funds.

The Medical and Health Services division will follow recommendations made by the Emergency Medical Advisory Committee and subcommittees to purchase plasma, antibiotics, morphine, additional aid station supplies, sanitation supplies and supplemental materials for aid stations, and to provide for unitizing and packaging costs, transportation, inspections, et cetera, within the state and for shipment by the Federal government. In addition, a one-week supply of facilities and equipment for the provision of whole blood will be purchased.

FEDERAL APPROPRIATIONS 1951

In 1951 approximately $75 million for civil defense was appropriated by Congress before it adjourned. This money will be allocated as follows: $11 million for operational expense, $56 million for medical and health services and engineering supplies, and about $7,500,000 for matching funds for communications, fire fighting equipment, etc. From the $56 million fund it is estimated that California will receive between $5 million and $6 million for medical purposes.

The formula which has been used within California for matching funds is as follows: If the Federal government provides 50 per cent, then state should provide 25 per cent and the local government 25 per cent.

WHAT ARE WE PLANNING AGAINST?

In California, plans are being made against eight atomic bomb strikes, two in the San Francisco area, two in the Los Angeles area, and one each in San Diego, Riverside, Fresno, and Sacramento.

The estimate of casualties (eight strikes) is as follows:

Total casualties	378,000
Total requiring hospitalization: 66⅔ per cent of 378,000	252,000
Maximum number in hospital at any one time: 75 per cent of 252,000	189,000

These strikes are considered as having occurred at noon on a weekday.

The number of first aid stations in the strike regions will be calculated on the basis of one station for each 600 casualties. Additional aid stations (up to 10 per cent more, the number depending upon the density of population) will be allotted to cover possible casualties in personnel and equipment incurred at the time of the explosion. At present, only five aid stations will be provided for in the non-strike areas. Each region should be told how many casualties it may expect and how many beds it should plan for.

The selection and size of improvised hospitals and the location and method of stockpiling first aid equipment are the responsibilities of the regional officials. In planning for estimated bed requirements, the state has referred to improvised hospitals in terms of 500 and 1,000 bed equivalents in order that planning for personnel and supplies will be uniform.

It has been recommended by the Medical Subcommittee of the Governor's Citizens Medical Advisory Committee that the minimum professional personnel for these hospitals would be 35 physicians for 500 patients (55 for 1,000), eight dentists for 500 beds, and 70 nurses for 500 beds.

The number of hospital beds and aid stations to be assigned is as given below:

*Region**	*Number of Hospital Beds To Be Provided by Each Region*	*Aid Stations*
1 (non-strike)	1,500	5
2 (non-strike)	1,500	5
3	70,500	255
4	11,000	39
5 (non-strike)	3,000	5
6	7,500	28
7 (non-strike)	4,500	5
8	5,000	18
9	81,500	276
10	13,500	47
10	199,500	683
Total beds (strike regions)		189,000
Total beds (non-strike regions)		10,500

THE CALIFORNIA MEDICAL ASSOCIATION IN CIVIL DEFENSE

The fundamental problem in civil defense is a quantitative one. Preparations must be made to mobilize and transport great numbers of medical and allied personnel and enormous quantities of medical supplies to any major disaster area, and to transport, hospitalize, and furnish prompt treatment to a tremendous number of casualties. Environmental sanitation must be maintained as well as the safety of the water, food, and milk supply. All this will have to be done under adverse conditions since there will be many professional casualties and much material damage. Also, plans must be made to deal with radiation injury and chemical and bacteriological warfare.

The proposed plan for the Medical and Health Services Division in the California Civil Defense Organization assumes that it is the division's task to provide for the augmentation of the services of the regularly constituted medical and health organiza-

* Region 1.—Del Norte, Humboldt, Lake and Mendocino Counties.
Region 2.—Butte, Glenn, Lassen, Modoc, Plumas, Shasta, Siskiyou, Tehama, and Trinity counties.
Region 3.—Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties.
Region 4.—Alpine, Amador, Calaveras, Colusa, Eldorado, Nevada, Placer, Sacramento, San Joaquin, Sierra, Stanislaus, Sutter, Tuolumne, Yolo, and Yuba counties.
Region 5.—Monterey, San Benito, and Santa Cruz counties.
Region 6.—Fresno, Kern, Kings, Madera, Mariposa, Merced, and Tulare counties.
Region 7.—San Luis Obispo, Santa Barbara, and Ventura counties.
Region 8.—Inyo, Mono, Riverside, and San Bernardino counties.
Region 9.—Los Angeles and Orange counties.
Region 10.—Imperial and San Diego counties.

tions in order to make available on short notice the expanded force of medical service and facilities that will be needed during the period of emergency. This plan outlines in detail the steps to be taken with regard to the emergency medical services, emergency public health services, and radiological safety services.

In June 1950, the National Security Resources Board recommended to state governors that they appoint their state health commissioners to be their state civil defense health service directors. It was further recommended that local health commissioners be placed in charge of local civil defense health services. Accordingly, Governor Warren appointed Dr. Wilton L. Halverson, the director of the California State Department of Health, as Director of the Medical and Health Services, and his agency was given responsibility for development of the medical and health plans of the State Civil Defense Program.

Shortly after the appointment of Dr. Halverson, the Governor appointed a Citizens Advisory Committee on Medical and Health Services to the State Disaster Council. The State Disaster Council is the policy-making board in civil defense for the State of California and the board to which the Governor looks for advice and recommendations.

The appointment of the Citizens Medical Advisory Committee greatly accelerated the civil defense program, and information of the over-all state medical picture and unification of plans and procedures was obtained in this way. This Medical Advisory Committee is composed of representatives of the California Medical Association, the osteopathic, dental, hospital, nursing, and veterinary associations, the drug trades, state and national public health services, American National Red Cross, funeral directors, water works, sewage disposal systems, the Sixth Army, Western Sea Frontier, Fourth Air Force, the universities, and others. This committee has subcommittees and also an executive committee to facilitate and coordinate its activities.

The state of California has been divided into ten regions for purposes of planning mutual aid. Six of these ten regions have been designated as target regions, and plans have been made accordingly. Under disaster conditions but with less than a state of extreme emergency the line of command and control extends from the Governor through the State Director of Civil Defense and stops at regional coordinators. The state civil defense organization will act to advise, to assist and to coordinate disaster activities only to the extent that lower political governments request such action. In a state of extreme emergency the line of command and over-all control extends to the directors of civil defense of cities and counties.

One of the main functions of the California Medical Association in civil defense is to correlate its activities with those of the state and federal governments and then to pass this information on to the local county medical societies.

In March of 1950 the Emergency Medical Service Committee of the California Medical Association was reactivated. The chairman of this committee attended the course on the medical aspects of atomic warfare and the medical conference on civil defense given by the American Medical Association. The day before the outbreak of hostilities in Korea, this committee adopted a planned course of action. On July 11, 1950, the chairman was appointed as chairman of the Citizens Advisory Committee on Medical and Health Services by the Governor. On March 31, 1951, the California Medical Association sponsored a refresher course for all county medical society civil defense committees. This meeting included representatives from the Federal government as well as key personnel from the state and local organizations. Additional refresher courses are planned.

In summary, it can be stated that the California Medical Association has:

1. Participated in atomic energy training courses regarding medical aspects of atomic warfare.

2. Kept abreast of civil defense activities in the state in meetings with the Citizens Medical Advisory Committee and with the California Disaster Council.

3. Sent representatives to medical civil defense conferences sponsored by the Council on National Emergency Medical Service of the American Medical Association.

4. Correlated its activities with those of dental, nursing, veterinarian, and other such organizations through membership in the Citizens Medical Advisory Committee.

5. Scheduled lectures on civil defense at medical meetings.

6. Planned civil defense exhibits (soon to be available) for use at civil defense meetings.

7. Helped in the planning and organization of a blood and blood derivatives program. (The California Medical Association has been very active in this phase of civil defense.)

8. Taken part in radiological safety advisory committee planning.

9. Arranged to conduct refresher courses for county medical civil defense committees.

10. Assisted in the preparation of the following manuals:

Manual for Emergency Field Treatment of Casualties. This manual outlines standardized treatment procedures for use in the field. It will be 4 x 6 inches in size and circulated to all interested groups.

Hospital Disaster Plan Guide for Existing Hospitals. Recommendations for the organization of hospital facilities and personnel are given in detail.

Plan for Operation of a First Aid Station.

Hospital Plan of Operation for Improvised Hospitals.

At no time has the California Medical Association received any Federal funds for civil defense activities nor is it planned to request any funds. Organized medicine will do its job as it has always done as a civic duty and as a representative of the free enterprise system.

In 1951 the House of Delegates of the California Medical Association abolished the Emergency Medical Service Committee and formed a new standing Committee on Military Affairs and Civil Defense.

INDIVIDUAL PHYSICIAN IN CIVIL DEFENSE

In California the county medical organizations have appointed civil defense committees. These local medical civil defense committees are working closely with civil defense authorities in their area and can expect help as needed from the California Medical Association.

It is the responsibility of every physician:

1. To be cognizant of the civil defense plan of his local community and of the exact part he is to play in it. He must find out at once where he is to be assigned if a disaster occurs during the day or night and how he will be notified. He should also be utilized according to his capability and his assignment station should be as close to his home or office as possible.

2. To assist actively and cooperate in the development and execution of the civil defense program. Many physicians seem unaware that there are local defense plans in which they have a vital place. A physician who has not been assigned a civil defense duty should immediately get in touch with his local medical society.

3. To keep abreast of current civil defense literature, particularly as it pertains to medicine. Physicians should study special simple treatment methods for burns, fractures, general first aid measures, problems of radiation injury, etc.

4. To attend special lectures on civil defense subjects and keep in close touch with his local medical civil defense committee.

5. To encourage his patients to take first aid courses. The minimum objective in California is for one member of each family to be trained in first aid.

A COUNTY MEDICAL CIVIL DEFENSE COMMITTEE

An excellent example of how medical civil defense planning has developed and is being carried out is the work of the Los Angeles County Medical Association Civil Defense Committee under the chairmanship of Dr. Frank Schade.

In 1947 a group of doctors who were members of the Medical-Dental-Nursing Veterans Association of Los Angeles formed a special committee to consider civil defense problems in the event of war. Members of the committee, who had seen havoc and destruction during the past war and were alarmed because nothing was being done in this country at the time, decided to meet once each month to discuss civil defense.

In July 1950, after the outbreak of hostilities in Korea, this committee was appointed as the civil defense committee for the Los Angeles County Medical Association. It began meeting for two hours three times a week to develop and coordinate civil defense activities in Los Angeles County. Special night meetings were also held. This committee was also officially recognized by the county health officer, the city health officer, and the county director of charities as an advisory and coordinating committee.

Los Angeles County has been divided into areas and an area medical director with two alternates has been assigned to each. First aid stations on the basis of one for each 5,000 population, and casualty collecting posts on the basis of one per 1,000 population have been set up. Approximately 400 first aid stations have been planned for.

Upon the recommendation of the Los Angeles County-Cities Civil Defense Regional Planning Board, a committee on public health and medical services was appointed. In addition to the Los Angeles County Medical Association there are representatives from the Los Angeles County Dental Association, Osteopathic Association, Nursing Association, Southern California Pharmaceutical Association, Veterinary Association, Hospital Association, Department of Charities, County Health Department and City Health Department. This committee meets twice each week at the headquarters of the Los Angeles County Medical Association. Transportation, sanitation, communications, improvising of hospitals, nursing problems, medical supplies, et cetera, are discussed in detail.

STATE DEPARTMENT OF PUBLIC HEALTH IN CIVIL DEFENSE

There has been splendid cooperation and good will between the California State Department of Public Health and the California Medical Association in civil defense.

Upon direction of Dr. Halverson, staff members of the State Department of Public Health were assigned on a full-time basis to develop medical and health planning for civil defense. In 1949 and 1950 the major work was done by Dr. Philip K. Condit assisted by Dr. James Ellis. Later Dr. Robert Dyar, Dr. Arthur W. Hollister, Jr., Dr. John Dement, Dr. Lester Breslow, Mr. Floyd Hartmen, Mr. Arve H. Dahl, and Mr. Frank V. Jones, Jr., Dr. James O. Culver, Mr. Bohn Lendemann and Miss Norma Whiteside were and have been very active in furthering civil defense plans.

At present, the staff of the Division of Medical and Health Services consists of Dr. Frank L. Cole, Brigadier General, M.C., U. S. Army (ret.) as chief; Dr. W. Dalton Davis, Rear Admiral, M.C., USN (ret.), assistant chief, Medical and Hospital Branch; Dr. Byron J. Peters, Colonel, M.C., U. S. Army (ret.), assistant to Dr. Davis; Jack Kirkpatrick, hospital consultant, assistant to Dr. Davis; Arve H. Dahl, chief of Sanitation Section and executive officer; Frank V. Jones, Jr., assistant chief of Medical and Hospital Supply Branch.

Both Major General Walter M. Robertson, U. S. Army (ret.), the Director of Civil Defense in California, and Mr. Burton Washburn, executive secretary of the California Disaster Council, have been most understanding and sympathetic to organized medicine and of its work in civil defense.

1407 South Hope Street.

Fractures About the Elbow in Children

FRANCIS J. COX, M.D., MELVIN T. HURLEY, M.D., and
RICHARD B. COMPTON, M.D., *San Francisco*

SUMMARY

The authors report clinical experiences in the treatment of 135 cases of fractures of the elbow region in children in which 60 cases have been followed to an end-result.

A detailed mode of treatment for supracondylar fractures, fractures of the medial epicondyle, and fractures of the lateral condyle and capitellum is discussed.

The pitfalls in treatment and causes of poor results are detailed.

FRACTURES of the elbow region in childhood are commonplace. Good results are not. Early recognition of trouble will reduce the number of poor late results.

During a recently ended five-year period, 135 cases of fracture of the elbow in children were observed on the Stanford orthopedic service of the San Francisco City and County Hospital. To date, 60 cases have been followed in the out-patient department to an end result. In all cases the injury was acute, and initial and subsequent treatment was carried out on the Stanford orthopedic service. The follow-up period has been up to four years. It is acknowledged that this is a relatively short follow-up period, but it is felt that it is sufficient to permit some conclusions with regard to complications.

This discussion will be limited to supracondylar fractures, fractures of the lateral condyle and capitellum, and fractures of the medial epicondyle.

Supracondylar Fractures. Brewster defined this fracture as any transverse fracture within an inch of the articular surface of the lower end of the humerus. This excludes the oblique fractures of the external condyle and capitellum and the epiphyseal separations of the medial epicondyle.

In the present series 32 cases were studied to an end result. The age of patients was from 3 to 10 years, the averaging age 6.1 years. The cases were equally divided as to the right and left arm, but no statistics are available as to major or minor arm ratio. There were 23 boys and nine girls in this group. In 28 cases the treatment was immediate closed reduction and immobilization in flexion. Traction suspension, after the manner of Dunlop, was used in three cases in which pronounced swelling of the soft tissues precluded the application of a cast with the elbow in a flexed position at the time of the initial treatment. When the swelling subsided, closed reduction and plaster immobilization were utilized in two of these three cases. All patients with fracture about the elbow are admitted to the hospital. They are observed closely until danger of ischemia is past. There were no complications due to ischemia. In two cases in this series, open reduction was necessary.

Figure 1.—Recurrence of posterior displacement of distal fragment due to inadequate immobilization. Loss of usual 20° anterior tilt has resulted.

To evaluate the end result, the following criteria were applied: If the fractured elbow was clinically or radiographically indistinguishable from the opposite uninjured elbow, the result was rated as excellent. This was the result in 25 cases in this group. A good result was one in which only a minimal amount of restriction of extension was present. There were six such cases. In none of them was there more than 15 degrees of restriction. A poor result was one in which by both clinical and radiographic means some anatomical disturbance was observed. In one case a cubitus varus deformity resulted from a growth disturbance of the medial condyle.

In treating a fracture of this type, certain normal anatomical relationships must be recognized and restored. The distal articular process of the humerus normally has an anterior tilt, which approximates 20 to 30 degrees. Unless this tilt is restored, function of the joint will be restricted (Figures 1 and 2). A persistent posterior displacement will result in loss of flexion, and anterior displacement in restriction of extension. Once the distal fragment has been restored, immobilization in flexion is necessary to maintain reduction. The amount of flexion that can

From the Stanford Orthopedic Service of the San Francisco City and County Hospital.

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be achieved at the initial treatment is determined by the extent of hemorrhage into the antecubital space. With the gradual decrease in swelling in the antecubital space, flexion of the elbow can be increased without impairing the radial pulse. The proper amount of flexion and position of immobilization is achieved when the thumb of the injured extremity can be placed comfortably against the neck on the uninjured side. This position must be attained within the first two weeks and maintained with a sling for a minimum of six weeks. In this classical Jones' position (Figure 3), the weight of the forearm cannot act as a lever to produce posterior displacement of the fragment. In one patient recurrence of posterior displacement of the distal fragment resulted from inadequate flexion and too short a plaster cast. Osteotomy, two years after initial reduction, was necessary for a final good result.

Figure 2.—Restoration by osteotomy of anterior 20° tilt of distal fragment.

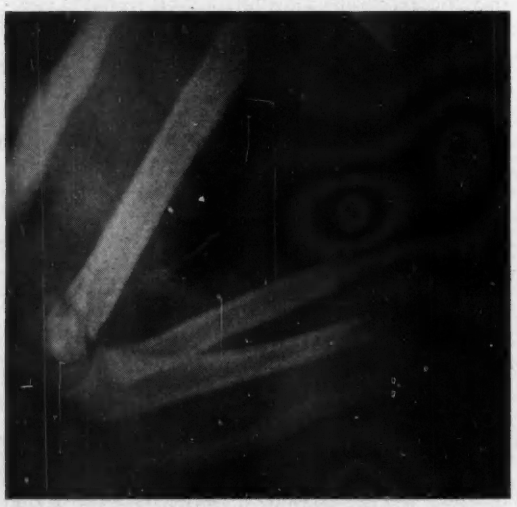

Figure 3.—Illustrating proper amount of flexion to insure obtaining the classical Jones' position.

Rotation of the distal fragment in relation to the shaft of the humerus will result in an abnormal axis for motion unless realigned. Malalignment changes the carrying angle and results in permanent weakness in lifting power of the arm. In one case, open reduction had to be carried out to achieve proper coronal alignment. At operation, a sharp spicule of the distal fragment was observed to be imbedded in the tendinous expansion of the triceps, holding the lateral condylar portion posteriorly. Reduction was maintained by two-point fixation, using one chromic suture through periosteum and one Kirschner wire drilled obliquely across the fragment into the medial cortex of the shaft. Sixteen months after operation, loss of the terminal 10 degrees of extension was the sole remaining disability. This was considered a good end result.

Fractures of the Lateral Condyle and the Capitellum. Eleven patients with fractures of this kind were followed to end results. The average age of patients—eight boys and three girls—was 7.5 years. The right elbow was involved in five cases and the left in six. Seven were treated by closed means, and four by open reduction. In all cases in which treatment was by closed means, there was minimal or no observable displacement of the fragment, and results were excellent. Open reduction was carried out in four cases in which displacement of the fragment was observed (Figure 4). In three cases the result was excellent. In the other, 18 months after operation there was a 10-degree cubitus valgus deformity and a 5-degree restriction of extension. This was the sole poor result of the series. Although there was no evidence by x-ray of vascular impairment to the lateral condyle in this case, there was inequality of growth between the medial and lateral epiphyses.

It would seem from this series that when minimal displacement exists, good functional results can be obtained by closed means. It is necessary, however, to immobilize the arm securely to prevent displacement of the fragment by the pull of the extensor muscle group. In cases of displacement, open reduc-

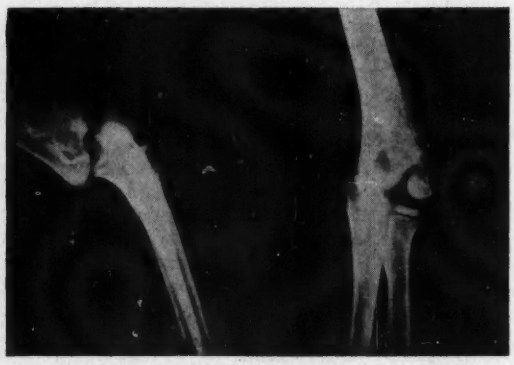

Figure 4.—Showing rotational displacement of lateral condylar fragment which requires operation and internal fixation to restore alignment.

Figure 5.—Inequality of growth of medial condyle despite x-ray evidence of lack of vascular impairment, 10° cubitus varus is present.

Figure 6.—Delayed growth arrest of trochlea. Two years after fracture.

tion is indicated. In light of the fact that the lateral condyle in children is composed primarily of a large cartilaginous mass, the need for reduction under direct vision is evident. Frequently, it cannot be ascertained from x-ray films how much rotation of the fragment is present, as the only visible fragment is the circular ossification center. Open reduction must be carried out with a minimal disruption of the soft tissue attachments in order to preserve the blood supply to the detached fragment. Growth disturbances are inevitable if a fragment is avascular, despite anatomical reduction. The method of internal fixation is of no importance provided it is adequate and does not interfere with growth of the epiphysis.

Fractures of the Medial Epicondyle. Fractures, or epiphyseal separations, of the medial epicondyle are more common than fractures of the medial condyle. This is fortunate, for if fracture lines extend into the condylar area the prognosis is grave (Figure 5). In the present series, 17 cases of fracture of the medial epicondyle were observed. In five the medial condyle was involved. Fractures of this kind occurred in a slightly older age group; the average age of the patients was 11.7 years. This is understandable as the epiphysis in this region appears after the fifth year. There were nine boys and eight girls. Six patients had fracture of the right arm, and 11 of the left. In 13 cases displacement was minimal and treatment was by closed means. In four cases in which the fracture line extended into the condyle and displacement was present, primary open reduction and internal fixation were carried out. The only poor result was caused by failure to restore the displaced medial condyle to its anatomical position at the time of operation. In that case there was also lateral dislocation of the elbow joint with anterior displacement of the trochlear epiphysis which was treated by closed reduction. Good restoration of alignment with 2 mm. separation of the condylar fragment was observed in postreduction x-ray films. Two years later a well-established growth disturbance of the trochlea was noted (Figure 6). There was a cubitus varus deformity of ten degrees, with restricted motion. It is probable the injury could have been treated more effectively by open operation.

DISCUSSION

Any fracture about the elbow joint of a child is a serious problem. A real possibility of growth disturbance with resulting disability is always present. Every poor result in the series here reported was associated with some interference with growth. To avoid poor results, anatomical restoration of alignment and reapposition of fragments is imperative. Frequently, open reduction is necessary to achieve this goal in cases of condylar fractures with displacement. The reduction must be accomplished within the first two weeks. After this time union has progressed so far that alterations in position cannot be achieved without a major disruption of the healing process. The belief that an incomplete reduction will be corrected by the remodeling process of growing bone is not justified. The reduction must be maintained in the Jones' position for a minimum of six weeks. Careful supervision in the initial stages of treatment can avoid complications of ischemia. The earliest sign of trouble from ischemia is pain localized to the muscles of the forearm on extension of the fingers.

In the postimmobilization period, function can be restored best by active use. The authors believe there is no place for physiotherapy in the treatment of fractures about the elbow. Forceful manipulations of a stiffened joint or the carrying of heavy objects will tend only to increase deformities.

To detect the late arrest or disturbance of growth in the epiphysis of the trochlea or capitellum, all patients must be followed for three to five years. Such alterations in growth may occur despite the best of care.

450 Sutter Street.

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Needle Biopsy of the Liver

General Considerations

WILLIAM E. MOLLE, M.D., and LEO KAPLAN, M.D., *Los Angeles*

SUMMARY

Needle biopsy of the liver provides concrete diagnostic information that cannot be as readily obtained in any other way. This report reviews 401 liver biopsies in 312 patients.

The major indications for use of this procedure are: To determine the cause of an obscure liver enlargement; to establish the cause of jaundice; to distinguish between malignant disease and cirrhosis of the liver; to determine when hepatitis has subsided; and to evaluate the results of treatment. At times, systemic disease that has not been recognized by other means may be diagnosed by this technique. There is risk in performing this test, and the 0.25 per cent mortality in this series compares favorably with that reported from other clinics. Where the diagnosis by biopsy could be compared with observations at operation or autopsy, the correct diagnosis was made by biopsy in 85 per cent of cases. Greater accuracy was obtained by two or more biopsic examinations in one case than by single biopsy.

In several cases in which surgical operation was considered, biopsic information made it unnecessary, and vice versa.

IN the four years prior to February 1950, needle biopsy of the liver was carried out 401 times in 312 patients. The present report is based upon a continuation of studies begun elsewhere by Molle.[7]

The development of needle biopsy of the liver and the various techniques employed have been adequately discussed, and the increasing number of papers[1-10] dealing with this subject testify to the interest in this method. Accurate pathologic information, readily obtainable with minimal risk to the patient, is possible by means of this technique. Moreover, serial studies to follow the progress of an illness or the results of therapy may be accomplished. Since only a small portion of tissue is removed, focal processes may be missed. Reliable information may be expected most often in diffuse disease of the liver. As the method is not without danger, it should be used only by those who have been thoroughly trained. For the best results, a pathologist who is interested in and familiar with examination of material of this type should be available.

METHOD

The technique previously described[2, 7] was used in all cases in this series. Many of the biopsies were done by residents, but all were done by or under the direction of one of the authors (W.E.M.). Approximately one-third of the 401 biopsies were done through an anterior approach (when the liver was down 5 cm. or more below the right costal margin). In the remainder a transpleural approach was used. Of the total number, 57 (22 per cent) were serial biopsies (Table 1). The incidence of complications was no greater in connection with multiple than with single biopsy.

INDICATIONS FOR BIOPSY

Of course, the prime indication (Table 2) for liver biopsy is suspicion of liver disease with the diagnosis inadequately clarified by other means. The method is of value in the differential diagnosis of jaundice, in

TABLE 1.—*Needle Biopsy of the Liver*

DURATION OF STUDY—Jan. 1947 to Feb. 1950	
No. of patients studied	312
No. of biopsies studied	401
With one biopsy	255
With two biopsies	37
With three biopsies	15
With four biopsies	2
With five biopsies	2
With nine biopsies	1

Multiple biopsies were done in 22 per cent of the cases.

TABLE 2.—*Indications for Biopsy*

Undiagnosed Hepatomegaly
Type of Jaundice
Neoplasm, metastatic or primary Cirrhosis, type
Progression of Hepatitis
Evaluation of Therapy
Unrecognized Systemic Disease
(Leukemia, Hodgkin's disease, brucellosis, sarcoidosis, miliary tuberculosis, infectious mononucleosis, schistosomiasis, hemochromatosis, amyloid disease, etc.)

From the Medical and Laboratory Services, General Medical and Surgical Hospital, Veterans Administration Center, Los Angeles 25, California.

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TABLE 3.—*Clinical Diagnosis and Changes Made on Basis of Biopsy*

Clinical Diagnosis	Biopsy: Diagnosis	Biopsy: No. of cases
Portal Cirrhosis (22 cases)	NDAR*	14
	Metastatic carcinoma	4
	Amyloidosis	2
	Hepatoma	1
	Hepatitis	1
Metastatic Carcinoma (9 cases)	Chronic cholangitis	3
	Normal	2
	Portal cirrhosis	2
	Hepatitis	1
	Subdiaphragmatic abscess	1
Hepatitis (36 cases)	Portal cirrhosis	19
	NDAR*	14
	Obstructive jaundice	3
Obstructive Jaundice (9 cases)	Portal cirrhosis	5
	Hepatitis	4
Hepatomegaly (16 cases)	Portal cirrhosis	7
	NDAR*	6
	Leukemia	2
	Hepatitis	1

* No diagnostic abnormality recognized.

detection of neoplasm, in determining the progress of hepatitis, in evaluating therapy, and in recognizing a number of systemic diseases, which may not, at times, be apparent otherwise (see Table 3).

CASE REPORTS ILLUSTRATING INDICATIONS FOR BIOPSY

CASE 1. The patient was a 48-year-old white male with syphilitic heart disease, aortic insufficiency, history of prolonged alcoholism, and hepatomegaly. Biopsy of the liver was done because of the possibility of portal cirrhosis or syphilitic hepar lobatum. No abnormality was noted in the specimen. At autopsy several months later the liver was observed to be normal.

CASE 2. A 50-year-old white male had progressive painless profound jaundice of several weeks' duration, anorexia, loss of weight, and pruritus. There was a history of penicillin injections three months before admittance to hospital. Results of liver function tests were consistent with both obstructive jaundice and parenchymal involvement of the liver. In biopsy the changes of infectious hepatitis were noted, and the clinical course was consistent with this diagnosis.

CASE 3. A 49-year-old white male was admitted with a history of anorexia followed by jaundice of several days' duration prior to admittance. There was a history of testosterone injections and methyltestosterone linguet administration for several months before onset of icterus. Results of flocculation tests were positive, the icteric index was 110, and the alkaline phosphatase content of the blood was not elevated. In biopsy, changes characteristic of obstructive jaundice were noted but as the attending physicians still felt strongly that the patient had infectious hepatitis, biopsy was carried out again six weeks later, and the original observation was confirmed. At this time the icteric index was 26, but the alkaline phosphatase had risen to 18 units (Bodansky). In exploration, chronic cholecystitis, cholelithiasis, and a calculus in the common duct were observed.

CASE 4. A 44-year-old white male with history of sudden onset of jaundice shortly before admittance, associated with anorexia and malaise, was thought definitely to have infectious hepatitis. Because the liver was larger than usual, biopsy was done. Portal cirrhosis with marked fatty infiltration was noted. Requestioned, the patient readily admitted to heavy consumption of alcohol and an inadequate diet for a period of many months.

CASE 5. The patient was a 54-year-old white male with bronchogenic carcinoma. Because of moderate hepatomegaly, biopsy of the liver was done and metastatic carcinoma was observed in the specimen.

CASE 6. A 52-year-old white male complained of epigastric pain radiating to the back. No abnormality was noted in roentgen studies of the spine and gastrointestinal tract, and carcinoma of the body and tail of the pancreas was suspected. Although there was no hepatomegaly, biopsy was done as a forerunner of surgical exploration. Metastatic carcinoma, of a structure suggesting the primary source was the pancreas, was noted.

CASE 7. A 35-year-old white male chronic alcoholic was admitted many times with evidence of hepatic disease. Liver biopsy was done nine times in the course of repeated admittance to hospital for the same condition. It was noted that repeatedly the fat cleared from this liver and the liver parenchyma was restored to normal. This occurred as quickly and as completely with the patient on a ward diet as it did when a high protein, high caloric diet and large amounts of lipotropic substances were given.

CONTRAINDICATIONS

There are several contraindications to needle biopsy of the liver.

1. *Uncooperative patient.* The patient must be able and willing to follow directions. If the patient is uncooperative, stuporous, or comatose, biopsy should not be done.

2. *Impairment of the blood clotting mechanism.* This is a major hazard, since fatal bleeding may follow the procedure. Bleeding time, clotting time and prothrombin time studies should be carried out before biopsy. After biopsy, the patient should be carefully observed for any evidence of hemorrhage. Serious bleeding usually occurs within eight hours and is manifested by the usual signs of acute loss of blood. Although these precautions were taken, the one patient in this series who died as a result of biopsy died of hemorrhage. The patient had aleukemic myeloid leukemia with hepatic infiltration. Prothrombin, bleeding, and clotting times, determined before biopsy, were normal. An hour and a half after biopsy, shock developed. Had there not been a delay in starting blood transfusions, the patient might have lived.

3. *Recent infection in the region of the biopsy.* This is considered a contraindication because of the likelihood of spreading the infection. However, in one case the nature and site of an infectious process were diagnosed by biopsy that was done for another reason. The patient had had gastric resection seven months before for carcinoma. Biopsy was done because metastatic liver neoplasm was suspected. When the specimen was examined, a subdiaphragmatic abscess was diagnosed. Later it was incised and drained. The infection did not spread. (This case is being reported elsewhere in detail.)

4. *Ascites should be removed prior to biopsy.* When the ascitic fluid is removed, the size of the liver is readily determined. Also, the liver becomes less mobile, and biopsy less hazardous.

5. *Abdominal distention.* This condition increases the possibility that a hollow viscus will be punctured. If distention is pronounced, biopsy should not be done.

6. *Chronic passive congestion of the liver.* The danger of post-biopsy hemorrhage is greater in this situation. However, in one case in which the patient was later found to have chronic constrictive pericarditis, biopsy was done without complication. Other observers have reported similar experiences.[2]

7. *A small liver.* The possibility of needling an extrahepatic organ is greater if the liver is very small. For this reason, if there is no hepatic dullness perceptible by percussion during expiration, and the liver is not palpable, biopsy should not be done. A small liver plus ascites may make biopsy of the liver impossible by the technique used in this series.

8. *Complete obstructive jaundice.* In this situation, bile is present under increased pressure in dilated bile ducts. The danger that leakage of bile will cause bile peritonitis is great. This occurred in one case in this series. (It is discussed later in this presentation.) Fortunately, this reaction occurs infrequently. Where the information is required, the risk may be worth taking, as Hoffbauer[5] has recently stated. This hazard does not exist where there is incomplete obstruction of the common bile duct.

REACTIONS TO LIVER BIOPSY

In the great majority of instances, liver biopsy causes little significant discomfort. Pain with radiation to the right shoulder was noted in 25 per cent of the cases in the present series, epigastric discomfort in 30 per cent, and pneumothorax in 2 per cent. The only major untoward reactions in the present series were fatal hemorhage (one case) and bile peritonitis (one case). Other reactions and complications which might be expected — apprehension, friction rub, pleural hemorrhage, perforation of hollow viscus, perforation of gallbladder, atelectasis, and reaction to local anesthesia—did not occur in this series.* The case in which fatal hemorrhage occurred was discussed previously. In addition, bile peritonitis developed after biopsy in a patient with carcinoma of the head of the pancreas. The site of bile leakage was not observed when the operation was carried out. Although the patient recovered from the peritonitis, he died subsequently from the primary disease. Later, biopsy was done, without complication, in seven additional cases in which obstructive jaundice was present.

DISEASES OF THE LIVER DIAGNOSED BY BIOPSY

A summary of the pathologic diagnoses made by one of the authors (L.K.) follows:

Cirrhosis, 176 cases (51 per cent); hepatitis, 44 cases (13 per cent); metastatic neoplasm, 15 cases (4.4 per cent); obstructive jaundice, nine cases (2.7 per cent); miscellaneous conditions, 47 cases (14.8 per cent). In 47 instances no diagnostic abnormality was recognized. The miscellaneous conditions and the number of instances of diagnosis were: chronic cholangitis, 12; granulomatous hepatitis, 4; leukemia, 3; in two cases each, hemochromatosis, malarial pigment, hemosiderosis, portal lipogranulomata, toxic hepatitis (carbon tetrachloride), and amyloidosis; and in one case each, malignant lymphoma, primary hepatoma, reticulum cell sarcoma, septic hepatitis (focal), agnogenic myeloid metaplasia, and subdiaphragmatic abscess. In five instances the specimens obtained were inadequate.

The clinical diagnosis was sustained by biopsy in 220 cases (70.6 per cent), whereas a change in diagnosis was made in 92 cases (29.4 per cent). In Table 3 are listed some of the changes from the clinical diagnosis that were made as a result of the biopsy. To simplify tabulation, cases in which varying degrees of fatty infiltration were noted in biopsy are listed under the diagnosis of portal cirrhosis. As may be noted in Table 3, three patients who on the basis of clinical examination were thought to have infectious hepatitis, had obstructive jaundice necessitating surgical intervention. The biopsy diagnosis was verified at operation in all three instances. On the other hand, four patients thought to have obstructive jaundice had infectious hepatitis, as was diagnosed by biopsy. These patients were spared surgical intervention, and the biopsy diagnosis was supported by the clinical course of the patients. In two cases leukemia was diagnosed by examination of a specimen of the liver after all other diagnostic methods had failed to establish the diagnosis.

In only 3 per cent of the cases in the present series was there failure to obtain an adequate specimen. This is related to the experience of the person performing the biopsy, and the fact that multiple punctures were done if necessary to obtain an adequate specimen.

ACCURACY OF BIOPSY DIAGNOSIS

In an attempt to determine the accuracy of diagnosis by biopsy in this series, the results obtained by single and serial needle biopsy were compared with observations at surgical exploration and at autopsy in cases in which such data were available.

In the group of cases in which diagnosis was confirmed either by autopsy or at time of operation were 45 in which single biopsy and eight in which multiple biopsy had been done. In seven (16 per cent) of the cases in which single biopsy was done, the biopsy diagnosis was incorrect. All of the diagnoses made on the basis of two or more biopsies agreed with the observations at operation or autopsy. In one case in this group the diagnosis made upon examination of the first specimen was incorrect; a second was examined and the right diagnosis was made. In the group in which diagnosis was determined by multiple biopsies, the diagnosis made on the basis of examination of the first specimen was incorrect in 6 per cent of the cases. It is impossible to say how many of these diagnoses will be altered by future surgical exploration or observation at autopsy. It may be concluded, however, that pathologic diagnostic accuracy is best served by multiple

* Since the above figures were compiled, 154 additional liver biopsies have been done without untoward event.

biopsy. A second biopsy is most clearly indicated when the first is not conclusive.

Autopsy was done in 39 cases and surgical exploration in 14 after varying periods from the time of liver biopsy. Thus surgical or autopsy observation was carried out in 53 cases—17 per cent of the series. Fifty-six pathologic diagnoses were made on the basis of liver biopsies in the 53 cases. Correct diagnosis was made in 86 per cent of those cases. The incorrect diagnoses deserve some clarification. In two of seven cases in which cholangitis was diagnosed by liver biopsy, concurrent disease which was present was not diagnosed. In one instance, a single peripheral metastatic lesion from a primary rectal adenocarcinoma, and, in the other, a deep-seated bile duct carcinoma, were observed at autopsy. Two of 13 instances of metastatic neoplastic growth in the liver were not diagnosed by liver biopsy. One case was previously mentioned, and in the other there were widely scattered metastases to the liver from a primary carcinoma of the pancreas. In one of two instances of primary carcinoma of the liver with simultaneous generalized liver cirrhosis, the cirrhosis was diagnosed by liver biopsy but the carcinoma was not. Cirrhosis was missed in four cases; only periportal fibrosis was noted in examination of each of these specimens. However, in these cases liver biopsy was carried out one, two, three, and 16 months, respectively, before surgical or autopsy examination. This time factor may account in part for the failure to evaluate the biopsy specimens properly, although it is well known that variation in the degree of alteration of the liver parenchyma from place to place does occur in this disease. In one instance of gummatous syphilitic hepatitis, the diagnosis made on the basis of liver biopsy was portal fibrosis with hepatocellular degeneration.

6333 Wilshire Boulevard.

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Prolonged Labor

PHILIP H. ARNOT, M.D., *San Francisco*

SUMMARY

Dystocia is usually the result of inadequate uterine contraction or slow cervical dilation or both.

Some conditions causing these deficiencies are large size of the infant, multiple pregnancy, hydramnios, faulty presentation (particularly the occiput-posterior), occluding tumors, fullness of the bladder, umbilical cord impediment, concealed uterine hemorrhage, clamping of a thick anterior cervical lip by the infant's head, adhesion of the membranes to the cervix, or delay in rupture of the membranes. Dystocia is often observed in patients with hypopituitarism. A nervous, worrying temperament may seriously affect the progress of labor.

Maneuvers that are helpful in many of these difficulties are described and the indications and dosages for Pitocin® are presented.

DYSTOCIA, one of the greatest obstetrical problems, is quite common. It occurs for the most part in primiparous women. In the author's experience most women who have prolonged labor at the birth of a first child have a much shorter period of labor at subsequent deliveries.

Usually dystocia results either because contractions are short and weak, with long intervals, or because the cervix, whether firm and rigid or soft and apparently normal, dilates slowly. In some cases both sets of circumstances are present. Some fundamental facts must be remembered for the understanding of these difficulties:

1. Delivery of an infant includes three stages—descent, dilation, and expulsion—any one or all of which may be prolonged or slow. Ordinarily the head is engaged from two to four weeks before term and descent is thus begun. As the cervix gradually dilates, the head usually continues to descend; after full dilation of the cervix and rupture of the membranes expulsion occurs. In some cases, however, the head is engaged only lightly, or not at all, until full dilation is accomplished or until the membranes have been ruptured.

2. The cervix cannot dilate until it has something coming down into it, over which it can retract and thus help stimulate uterine contractions.

3. If the uterine musculature is overly stretched, it cannot contract as frequently, as long and as forcibly as it could otherwise.

In light of these factors, it is well to consider certain conditions which prevent or retard the descent of the head and may lead to inadequate contraction. (The special problem of contracture of the pelvis will not be discussed in this presentation.)

A large baby may distend the uterus so that contractions are weak and infrequent and the descent and expulsion of the head are slow. Multiple pregnancy and acute hydramnios may have a similar effect.

Faulty presentations, such as face, brow, transverse, occiput-posterior and breech, frequently result in long, difficult labor. Of these, occiput-posterior presentation is the most common and will be discussed in detail later.

Tumors such as fibroids, ovarian and parovarian cysts, and also the other cornu of a bicornuate uterus, may so completely block the pelvis that cesarean section is necessary. A tumor is sometimes not discovered until late in labor.

A full bladder in the mother may interfere with descent of the baby's head. The author has observed several cases in which the head, after it was well into the pelvis, gradually was pulled so far back out of the pelvis by increasing distention of the bladder that it hardly could be felt upon rectal examination. Hence the bladder of a patient in labor must be kept empty, with the aid of a catheter if necessary.

A short umbilical cord or one that is around the neck may tend to hold back the head in the second stage and prevent its expulsion. It is therefore important to listen to the fetal heart after every second or third contraction in the second stage in cases in which the head is slow to advance; and the physician must be prepared to carry out forceps delivery if there is evidence of fetal distress.

Hemorrhage into the uterine wall, as in abruptio placentae with concealed hemorrhage, may also affect the efficiency of the contractions.

DEALING WITH NERVOUS PATIENTS

Women of certain types frequently do not have good contractions. Short, fat women with hypopituitarism are likely to have difficulty, as are nervous, temperamental, worrying women.

A patient of the latter type may be so tense and nervous that the cervix is apparently spastic and remains contracted because of this nervous control. Often when such a patient is given sedation to relax nervous tension the cervix will dilate rather rapidly. Some patients may repeatedly demand medication to relieve pains before labor is really well begun; but early medication usually prolongs labor. These women can be helped most by psychosomatic treat-

ment. If they can be talked to and encouraged to stand the pains until the cervix is dilated about three centimeters, medication then can be given without unduly slowing labor.

The use of Pitocin® may be advisable to stimulate labor in patients with weak, infrequent pains. This aspect will be discussed later.

In so-called cervical dystocia, labor is prolonged by slow cervical dilation. If the cervix is long and narrow, as it is in many cases of premature labor, it may take hours to efface and dilate. The physician can usually do nothing in such cases but wait.

Often a thick anterior cervical lip, which gets stuck between the symphysis and the head, holds back the head and becomes more edematous as labor goes on. If this occurs with the head or the breech high in the pelvis, if the baby seems unusually large and if the edema increases while the cervical dilation does not progress, disproportion should be suspected and cesarean section carried out. The thick anterior lip is observed usually in multiparas and usually when the cervix is dilated to six or eight centimeters. If the head is deep in the pelvis, the physician can easily push this cervical lip up over the head during a uterine contraction, keeping the palm upward and pressing firmly against the cervical lip with the index and third fingers while the other hand is pressed down on the fundus in order to keep the head deep in the pelvis. This maneuver can often be completed during one contraction but the pressure may have to be repeated during seven or eight contractions.

ADHERENT MEMBRANES PREVENTING DILATION

Another situation less frequently encountered is that in which the cervix effaces but does not dilate to more than one-half to two centimeters. It may be so thin that it is not palpable on rectal examination. The patient is usually in good labor, yet the cervix remains the same despite good contractions. In these circumstances vaginal examination should be done; it will probably be found that the membranes adhere so closely to the cervix as to prevent dilation. If the finger is passed around the cervix, separating it from the membranes, the cervix then may immediately dilate up to four to seven centimeters and labor proceed normally. It is usually best to rupture the membranes at the same time. In one case the author had to stretch the cervix with a Mayo clamp in order to make an opening large enough for insertion of the finger; when the membranes were separated from the cervix it readily dilated to four centimeters and labor proceeded quite rapidly.

If the membranes do not rupture normally they may prevent the head from descending through the cervix. This occurs usually in a multipara or with occiput-posterior presentation. The cervix may remain for several hours dilated to six or seven centimeters; the head is usually in mid-pelvis, the contractions are inadequate, and on rectal examination the cervix feels soft and seems to stretch very easily. Rupture of the membranes usually causes the head to descend immediately to the perineum and through the cervix. If the contractions do not improve immediately, Pitocin may be needed.

Similar treatment may be necessary in cases in which dilation is so slow that after 24 to 36 hours it has progressed to only three to eight centimeters. Often when the patient has been so long in labor the contractions are weak and only five or six minutes apart. If the baby is not too large, if the head or breech is deep in the pelvis, and if the dilation is at least five centimeters, it is fairly certain that the patient will deliver vaginally. The membranes should be ruptured and Pitocin administered intranasally in four to eight doses of 0.5 cc. once every half-hour. Usually good contractions will begin, the cervix will dilate and delivery will follow, with or without the aid of forceps. Very rarely it may be necessary to dilatate the cervix with every contraction, taking one or two hours before dilatation is complete. If the patient is very tired, nervous and tense, one of the barbiturates or a stronger drug like Pantopon® or Demerol® may be used to relax her and give her a little rest, after which the cervix often will dilate fairly rapidly.

The procedure described for pushing a thick anterior lip over the baby's head may also be applied to speed slow labor, with forceps used if necessary to complete the delivery. The procedure may be used also to speed delivery in such emergencies as hemorrhage, convulsions, and fetal distress.

If the presenting part (head or breech) remains high and especially if the baby seems large, cesarean section is probably advisable, especially if there is no sign of progress after the membranes have been ruptured or Pitocin has been administered.

The previously discussed features of weak, infrequent contractions and incomplete dilation are often associated with occiput-posterior presentation. Usually if the cervix is slipped over the head with the fingers the head descends immediately to the perineum, rotating at the same time to an anterior position. If it does not rotate properly, however, it may be rotated in the following manner, which is applicable whenever the head is in posterior position:

With the right occiput posterior, stand on the patient's right side and insert the index finger of the right hand into the vagina to identify the posterior fontanelle. Press on the small ridge formed by the left parietal bone overriding the occipital (the lambdoid suture), forcing the head upward, anteriorly and to the right. At the same time press down on the fundus with the left hand to keep the head deep in the pelvis. The head can often be turned in one or two contractions but 15 or 20 may be required if the head is large or tight in the vagina. No attempt should be made to turn the head until it is well below the spines.

Pitocin should preferably be administered intranasally at first in all cases. If there is no effect, it may then be given intramuscularly. The usual intranasal dose is 0.5 cc. every half hour for not

more than eight doses. Sometimes normal contractions will follow even the first dose, although in other cases two or three series of eight doses, separated by six- to eight-hour intervals, may be necessary. Some patients may need an occasional dose to keep labor going well. If the cervix is fully dilated and there is no response to intranasal dosage, one minim of Pitocin may be given intramuscularly, every 15 minutes if necessary. The dose may be increased to two, three or even four minims every 15 minutes. Seldom are more than three or four intramuscular doses required.

Estrogenic injections are given in many cases, in two or three doses of 20,000 to 40,000 units each during the course of long labor. The estrogens are believed to be helpful in stimulating contractions of the uterine musculature.

The cervix is often lacerated on one or both sides during such procedures as dilatation or pushing the cervix over the baby's head. Indeed, it is often lacerated after normal labor in which it has not been touched. Despite the statements in textbooks, the lacerations almost never bleed; the author has observed only two instances in which suturing was necessary because of bleeding. The cervix should always be inspected after delivery, whether labor was prolonged or normal, and even lacerations no deeper than one-half centimeter should be sutured. The cervix can be easily exposed by the use of anterior and posterior vaginal retractors. The anterior cervical lip is then grasped with a sponge stick at the 12 o'clock position. With this as an anchor, the cervix can be exposed serially by alternately grasping and releasing with two other sponge sticks around the entire circumference. Any laceration can be easily sutured by grasping the cervical lip at each side of the laceration with a sponge stick and starting a continuous suture high up at the apex of the tear.

2439 Ocean Avenue.

Psychosomatic Problems in Urology

ALFRED AUERBACK, M.D., and DONALD R. SMITH, M.D., *San Francisco*

SUMMARY

The intimate relationship between the urinary and genital systems permits stimuli in one system to influence the other. At least 15 per cent of women with symptoms of cystitis have no organic basis for their complaints. In psychiatric studies it has been noted that sexual conflict is the primary etiological factor in these patients. In some cases, continuance of the disorder leads to irreversible organic change. Urinary symptoms such as frequency, urgency, burning or retention are most common in women and become an automatic response to anxiety-provoking or sexual stimuli.

In men, functional urinary symptoms are relatively infrequent. Often they indicate problems of genital dysfunction. Complaints of impotence, penile pain, testicular pain, or non-specific urethritis stem back to difficulties in their sexual lives. Many of the patients have symptoms of a generalized anxiety tension state due to sexual problems.

A purely organic consideration of genitourinary disorders will lead to erroneous conclusions and unsatisfactory therapeutic results. The psychosomatic approach—that is, considering both physical and psychological aspects—will explain many hitherto difficult cases.

IN recent years extensive studies have been made of the effects of emotional tension upon the skin, cardiovascular, respiratory and gastrointestinal systems, and the psychosomatic manifestations of disease of these systems and of other organs are now commonly recognized and treated from the psychiatric standpoint.[8] Emotional tension acting through the autonomic nervous system can affect the functioning of most organs. It is well known that many persons under acute emotional stress, such as that caused by taking examinations, may have urgency and frequency of urination, or even, on occasion, retention of urine. A tense person, chronically anxious, may respond to continuous strain by frequent urination, which may become a habit.

In view of this general knowledge, it is surprising how little can be found in the urologic and psychiatric literature on the interrelationship of the emotions and the urogenital system.[2, 3, 4, 6, 7] Observation of patients over the past eight years has convinced the authors that in cases in which urologic symptoms respond poorly to therapy for organic disease, there is associated emotional tension. If in careful examination organic disease is not found to be present, the psychological background of the patient should be explored. Consistently in such cases it has been noted that the patient has extreme reactivity to the stresses of everyday living. In none of the cases observed by the authors in which this situation existed did the patient have a satisfactory sexual life. Invariably, some emotional disturbance or frustration immediately preceded the onset of symptoms and each exacerbation occurred in similar circumstances.

While urination is a physiological process by which vesical tension is relieved, it also serves as a means of expressing certain psychological tensions and attitudes. The intimate histological and embryological connection between the urinary and genital systems permits physiological and psychological stimuli in one system to flow over and find discharge in the other. In the child, urination gives a feeling of pride and of physical satisfaction. Under certain stresses, an adult may revert to this action as a source of physical pleasure. In particular, some persons substitute urinary symptoms for sexual satisfaction when the latter is unobtainable. Some women retain urine for long periods because they experience a pleasurable sensation on voiding. When sexual arousal first appears in a child or adolescent, the unfamiliar feelings of tumescence and pelvic fullness are interpreted as stimuli from the bladder with a feeling of the need to urinate. Many adults have found that partial distention of the bladder enhances their erotic pleasure in sexual relations. Some persons, particularly women, owing to various conditioning experiences, have no direct sexual pleasure; in them it is displaced entirely to the urinary system. Almost all patients with urinary frequency and urgency for which no physical cause can be found are women, and almost all are sexually repressed or even frigid, their symptoms originating in situations of sexual frustration or temptation.

"CYSTITIS" IN WOMEN

"Cystitis" is a common disease in women. Among the symptoms are urgency, frequency, nocturia, and burning on urination. Of paramount importance in differential diagnosis is proper examination of the urine obtained by catheter. Absence of pus cells or bacteria in the urinary sediment indicates that vesical irritability may be due to nervousness. One-fourth of women with symptoms of cystitis have no urinary infection, and obviously chemotherapy will not re-

From the Departments of Psychiatry and Urology, University of California School of Medicine, San Francisco.

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lieve them. But about two-fifths of the patients of that order do have chronic urethritis which responds to vaginal stilbestrol suppositories. In the remaining three-fifths the symptoms of cystitis are psychogenic. In cystoscopic examination of patients in the latter group, increased redness of the trigone and urethra usually is noted, leading to a diagnosis of organic "trigonitis" and "urethritis." Occasionally hypertrophy of the detrusor muscle, secondary to sphincter spasm, is noted. Empirical treatment of these "inflammations" as organic disease consists of urethral dilatations, vesical irrigations and instillations of various antiseptic solutions and the endoscopic applications of such drugs as 10 per cent silver nitrate solution. In the authors' experience, response to this form of therapy is slow.

Embryologically, the urethra and trigone arise from cells which form the female generative tract. Hence the urethra and lower genital tract in the female not only have a common blood, lymph and nerve supply but are under the the same hormonal influence. Many women after prolonged love-making without copulation have low abdominal pain from the unrelieved congestion of the sexual organs, and frequency of urination may develop due to temporary vesical irritability. It is commonly observed that symptoms of "cystitis" are worse on the day after unsatisfactory intercourse and at the time of menses. Symptoms which should suggest the possibility of vesical irritability secondary to tension include frequency without nocturia, or intermittent frequency such as that occurring only in the morning or at bedtime.

In studying these patients it is frequently noted that the initial urinary symptoms came on abruptly after a sexually stimulating situation which for psychological reasons proved unsatisfactory. This appears particularly in cases in which the sexual feelings are repressed—that is, in which the patient is not consciously aware of erotic sensation. A frequent example is the sexually inexperienced or prudish young woman who becomes aware of pelvic fullness owing to sexual stimulus but interprets it as a need to urinate. By denying to herself that she has any arousal she displaces all sexual feelings to the urogenital system and establishes this pattern for tension discharge. It must be emphasized that this is an unconscious process; it is entirely beyond the patient's control and awareness. Once this mechanism is operative, sexual stimuli are responded to by urinary symptoms such as frequency or urgency, especially if sexual arousal is considered wrong. In several cases of married women, observed by the authors, the urological symptoms first appeared when the patients were on the way to or engaged in an extramarital affair.

CASE REPORT

A 27-year-old woman was referred because of complaints of urgency and frequency. Reared in a strict home, in fear of an alcoholic father, she was not permitted to have dates with boys. When 16 years old, the patient went on her first date without the consent of her parents. During the evening, she felt very tense due to fear of punishment and also the excitement of having her first boy friend. Sitting in a restaurant, she felt urgent need to void but was hesitant to ask to be excused. Suddenly she lost control and urinated, much to her shame and embarrassment. From then on she constantly feared a similar mishap. As a result of this constant tension, she felt a need to void frequently, sometimes as often as every hour, and would become panicky if no toilet were available. In marriage, she was unable to respond to sexual stimulation, and intercourse invariably culminated in distressing urgency and frequency. Menstruation also was accompanied by an increase of these symptoms. In recent years, she found that any disturbing situation accentuated the urinary difficulty.

No abnormality was noted in a urological examination. In a cystoscopic examination the urethra was observed to be normal but there was pronounced trabeculation of the bladder.

Under psychiatric treatment, the urgency and frequency diminished considerably as the patient understood the relation of these factors to her tension. Although the symptoms were much improved, there was some persistence because the need to void had become a habit and because organic changes had occurred in the bladder.

The case reported demonstrates how the initial urinary symptoms arise without any awareness of their true significance. The anxiety the patient felt in doing something wrong and the sexual stimulation when the patient was 16 years old were interpreted as a need to urinate. This established a pattern for reacting to subsequent erotic or anxiety-provoking stimuli with symptoms of frequency and urgency. Functional urological disorders of this kind occur most frequently in women. Men with this condition have comparable personality characteristics.

In studying patients with "cystitis" that does not respond to usual therapy, it is noteworthy that many of them unconsciously achieve feelings of erotic pleasure in the ministrations of a physician; manual or instrumental manipulation, particularly urethral dilatation or bladder irrigation, may be a distinct source of pleasure. A colleague reported that a 33-year-old unmarried woman under his psychiatric care was likely to have symptoms of cystitis when sexual outlets were unavailable. At such times, although the urine and the urinary tract were essentially normal, urgency and frequency continued until a course of bladder irrigations was carried out. Under psychiatric treatment, the patient recognized that the urological complaints were expressions of unsatisfied sexual needs.

OTHER PSYCHOLOGICAL FACTORS

Along with the erotic element present in urination, there is also a hostile or aggressive element. The not uncommon use of words or phrases referring to urination to express hostility in everyday language is indicative. Not infrequently noted in study of patients with urinary disorders are intense feelings of anger, often associated with the feelings of sexual deprivation, directed to the sexual partner. Many women with urinary symptoms have deep-seated hostilities toward men and dissatisfaction with their own femininity. In the case of a 35-year-

old woman, recently observed, all these elements were illustrated. The patient had been under some pressure from her mother and sister-in-law and was increasingly resentful. There had long been a struggle between the patient and her husband "to see which one had supremacy." She stated: "At this time my husband was top-dog and I wouldn't respond to him sexually. When I phoned for a psychiatric appointment and was told to wait a week I got mad, felt I was going to burst and found myself going to the toilet all day. From experience, I know that my urinary symptoms are not due to infection but to accumulated anger and frustration." When the patient was first observed, a burning sensation upon urination, and frequency and urgency were still present, but the symptoms rapidly cleared following discussion of the psychic factors responsible.

The functional disorders mentioned thus far are observed most often in women; not many men have functional cystitis. However, both men and women can have inhibition of the urinary stream under stressful situations. Some persons may have difficulty in voiding in public toilets. Usually, upon psychiatric study they are observed to be shy and retiring, unsure of themselves, and to have considerable sexual anxiety.

In cystometric studies carried out by Straub, Ripley and Wolf[6] it was observed that alterations of bladder function might be, in some instances, the only physical expression of emotional tension, or they might occur as part of a general psychophysiological reaction in association with other somatic disorders such as headache, backache, or menstrual irregularities. Pronounced increase in vesical tone could be produced by conversations touching on the patient's emotional problems. Bladder hyperfunction with urinary frequency was associated with a reaction of anxiety and resentment accompanying overt conflict. Bladder hypofunction with urinary retention was associated with emotional repression and withdrawal attitudes.

DISORDERS IN THE MALE

Impotence in its various forms of premature ejaculation, difficult erection, or lack of pleasure in intercourse is present in a very high percentage of the male population. The majority of men have had these difficulties at some period in their lives, and in many it persists through life. Kinsey[1] reported that more than 50 per cent of married men have some degree of premature ejaculation. Many men ejaculate within a few seconds of coital entrance or even before entering. Not everyone so affected seeks medical help. Many accept this sexual disability and go through life with no conscious concern. Others may be concerned and seek help to have it corrected. Many others attempt to deny the problem by a mechanism termed repression, and the anxieties express themselves in other symptoms, sometimes in testicular pain or penile pain, non-specific urethritis, or other dysfunctions of the genital system, but more often in symptoms of less obvious association such as headache, backache, gastric disturbance, and fatigue.

Impotence is rarely owing to organic disease. In most cases it is of psychic origin, nearly always the result of sexual fear.[2] Among the various kinds of sexual fear the commonest are fear of failure, fear of injuring the woman, fear of women, fear of consequences, fear of incest, fear of impregnating. In present-day culture, reaction to sex is mixed. On one hand are taboos on sexual curiosity and activity so that sexual matters are secret and surreptitious, and on the other a tendency to joke and deride. While masturbation is a normal phenomenon, society still considers it as bad, dirty or indecent. Every young man is disturbed by masturbation and nocturnal emissions until he somehow learns that they are quite normal. Other sexual activities which are now known to be biologically sound are anathematized as disgusting or abnormal. Even though sexual impulses are intensely strong in late adolescence and early adulthood, society rules that sexual activity be deferred until marriage so that sexual behavior at this time often is tinged with guilt. Prohibitions against and misinformation about biologically normal function set the stage for greater or lesser sexual difficulty at a later date.

Sexual fear may spring from less obvious roots. An overly affectionate mother will keep her son close to her and consciously or unconsciously try to prevent him from growing up and breaking away. The "silver cord" of novels is no mere figure of speech. A young man, consciously or unconsciously sensing his mother's clinging need, will feel guilt when he goes with girls, guilt that in greater or lesser measure influences his sexual ability. Even marriage does not solve this problem, since the maternal attachment is carried into the marriage; the man unconsciously sees his mother in his wife and fails sexually. The variations on this theme are infinite, but repeatedly the result is the same—some degree of sexual failure.

The growing child in the home where sex is considered nasty or wrong can hardly be expected to have a normal reaction when he reaches maturity. If the father is brutal or violent in action, the child considers sex an aggressive attack and in later years has the feeling that sexual activity is harmful to the woman.

A man who, as a young boy, became head of the family after the father's death—became the mother's husband in practically all respects save one—may have so deep a feeling of responsibility and attachment that he either cannot break away or, if he does marry, may be incapable of performing sexually as a husband.

Another common example is the man whose mother was the dominant force in the home and was contemptuous of or belittling of the husband. From this the young boy gets the impression that women are aggressive, destructive forces and a fear of women develops. As an adult, he, too, fails in sex relationships. (One patient, who was reared in a household ruled by a domineering mother, is com-

pletely impotent with his wife. He can have extramarital affairs without difficulty so long as he feels that he is in control of the situation. If the paramour of the moment becomes possessive or emotionally demanding, he becomes impotent.)

Fear of pregnancy may be present consciously or unconsciously in the male as well as in the female. In his children, a man may experience a continuation of the rivalry and jealousy he had for his brothers and sisters when he was a child.

Pain in the penis, urethra, prostate, testes, scrotum or perineum may be an expression of sexual anxiety. It is probable that in a careful history it will be noted that a patient with any of these symptoms is disturbed by premature ejaculation, by feelings of sexual temptation, or other expressions of sexual inhibition. Such a patient may attribute his failures to some organic defect and, by focusing attention there, stress any pain or discomfort in the genital area which might ordinarily have been transient. The penile or testicular ache is often the end result of sexual excitement occurring during sleep, culminating in erection and abruptly stopped, consciously or unconsciously, on the verge of orgasm.

Many men complain of persistent or recurring urethral discharge which, on microscopic examination, is found to contain no organisms and few, if any, pus cells. Such men generally are excessively sincere and conscientious with considerable guilt about real or fancied extramarital sexual affairs, if married, or sexual activity of any sort if unmarried.[5] If they indulge in any sexual act which they consider wrong, they have intense guilt, anxiety or even depression. They strive for continence, although consciously or unconsciously in a state of sexual excitation. The appearance of a urethral discharge, secondary to the prostatic congestion produced by sexual arousal, stirs up their guilt feelings. To treat this "urethritis" by somatic means is but to increase the feeling of guilt.

Most men with problems of sexual dysfunction have generalized nervous symptoms varying from anxiety tension states to neurasthenia. In dealing with a patient who has innumerable symptoms referred to many different organic systems with variable appearance and inconstant distribution, the possibility of anxiety neurosis should be considered. Careful questioning regarding details of his personal life, especially problems and worries in the sexual realm, will nearly always reveal highly pertinent material. In many cases increased redness of the trigone, prostatic urethra and verumontanum will be observed in cystoscopic examination. These changes are often interpreted as the causes of impotence rather than as the natural result of the sexual difficulties. This erroneous conclusion leads to organic therapy aimed at correcting the hyperemia. Unfortunately, not only are results unsatisfactory but guilt feelings are further increased, for the innocent patient is then convinced that the masturbation which he practiced in his adolescent years has caused severe damage to his sexual organs.

There is no question that some patients have been helped by testosterone, prostatic massage, instrumentation, or operative measures. Results, however, are inconstant. The administration of testosterone has strong suggestive power because the patient feels that a hormonal deficiency is being rectified. Many persons who have spectacular response to hormones do just as well on placebo pills so long as they believe them to be testosterone. The improvement associated with massage or other physical measures may also have a large psychic component. Guilt feelings due to masturbation or other forbidden sexual activity may be assuaged by the pain and discomfort of treatment which unconsciously are considered retributive punishment.

450 Sutter Street.

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Malignant Tumors of Childhood

RALPH E. KNUTTI, M.D., *Los Angeles*

SUMMARY

In the past 20 years, cancer in the age group, 0-14 years has become the second leading cause of death by disease. At some ages, notably between 5 and 14, it may be the leading cause of death by disease.

Leukemia is the most frequent form of cancer in childhood, and tumors of the brain are in second place.

An attempt should be made to categorize more accurately tumors stated in reports as "miscellaneous," since in the reports analyzed herein, 15.8 per cent of all malignant lesions were so classified.

AS recently as 1939, one of the foremost authorities on malignant disease in children stated that "cancer is a rare disease in childhood."[2] Less than ten years later malignant disease was, and it is now, the second leading cause of death *from disease* in the age group from birth to 14 years. It is outranked only by pneumonia—a convenient diagnosis which may or may not indicate the fundamental underlying disease process. Other statistics have pointed out that cancer in 1949 was the leading cause of death by disease at age 11; only accidents caused more deaths.[5]

The statement that the cancer age "starts at 40," once so carefully impressed upon medical students, was not only misleading but contributed to the general unawareness of the incidence of this disease in childhood, which in turn led to laxity both by the profession and the laity in the early recognition of certain types of childhood malignant disease which, if treated soon enough, may be cured. A random sample of one year, 1949, in the city of Los Angeles (Table 1) gives a comparison of death rates from cancer, compared with total deaths from all causes. It is significant that although the *number* of deaths from malignant disease was higher in persons more than 45 years of age, the highest *incidence* of cancer in relation to total deaths was in the age group 5-14 years where over a fifth of all deaths were due to this disease.*

There was some justification in 1939 for the statement referred to above, for there has been a pronounced increase in the reported death rates from childhood cancer in the past 20 years. According to statistics of the Metropolitan Life Insurance Company[6] the *increases* in the death rates from the period 1930-1934 to 1943-1947 were as follows: Ages 1 to 4, 28 per cent; 5 to 9, 60 per cent; 10 to 14, 36 per cent. It is not the aim of this report to attempt to explain this apparent increase, but it would be interesting to know how much of it is due to increased skill and use of new techniques in making the diagnosis on the part of the physician and the pathologist.

The purpose of this review is to compare statistics on malignant disease collected at the Los Angeles Children's Hospital from 1942 to 1950, with similar reports from reliable sources over the period from 1930 to 1950. All cases reported from the Los Angeles Children's Hospital were verified by biopsy or postmortem examination, or, in the case of leukemia, by blood studies and/or bone marrow puncture. In assembling the data, the anatomical situation of the tumors has been given first consideration, and no attempt has been made, because of obvious difficulties, to establish the histologic types in any series other than that from the Los Angeles Children's Hospital. Further, leukemia and Hodgkin's disease, which some investigators prefer to exclude, have been included—rightly so, it is believed, since at the present stage of knowledge these diseases cannot be dissociated, in humans, from other malignant conditions. In addition, at the hazard of being inconsistent, neuroblastoma has been included. This has been done because in the Los Angeles Children's Hospital series this tumor is a virtual tie for third place among the tumors listed, and if only for purposes of subsequent review, it should be mentioned. Knowledge gained about this particular type of tumor in the past two decades leads to belief that there may be many cases of neuroblastoma included in the statistics under the headings of lymphosarcoma, "small round cell tumor" or bone tumor. In addition it is a type of tumor which is amenable to treatment. Ten of 40 children in whom neuroblas-

TABLE 1.—*Cancer Deaths, Los Angeles City, 1949*

Age	Total cancer deaths	Total death (All causes)	Per cent cancer of all causes
0- 4	21	1,138	1.8
5-14	26	118	22.0
15-24	26	269	9.6
25-44	275	1,733	15.8
45-64	1,351	6,243	21.6
65 plus	1,570	10,625	14.7
Total	3,269	20,126	16.2

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From the Departments of Pathology, Children's Hospital, and the University of Southern California School of Medicine, Los Angeles.

The author's present address: National Institutes of Health, Bethesda, Maryland.

* Courtesy of John Chapman, M.D., Los Angeles City Health Department.

TABLE 2.—*Malignant Disease, Los Angeles Children's Hospital (Eight Years—1943-1950)*

Disease	Cases	% Total
Leukemia	182	49.0
Brain tumor	66	17.8
Neuroblastoma	24	6.5
Wilms' tumor	24	6.5
Lymphosarcoma	21	5.7
Retinoblastoma	20	5.4
Miscellaneous	34	9.1
Totals	371	100.00
Total admissions	45,460	
Per cent of total admissions	0.8	

toma was observed at operation in Boston Children's Hospital in the period 1929-1939 were alive from three to eight years after the presence of the tumor was noted.[3]

Table 2 lists the leading type of malignant disease at the Los Angeles Children's Hospital in the stated eight-year period. As in most other series, leukemia leads the list. It is of interest to note the incidence of malignant disease in the number of hospital admissions during this period. The importance of a figure of this kind is doubtful, however, for it depends to some extent upon the specialized activities of a given hospital. For example, in comparing it with a similar computation at the Washington, D. C., Children's Hospital[1] it is noted that the figure given by the latter is but one-quarter (0.2 per cent) of the Los Angeles incidence (0.8 per cent). It is doubtful if there is four times as much childhood malignant disease in Los Angeles as in Washington.

In an attempt to establish some basis for evaluation of the Los Angeles figures, several categories were considered, and it is unlikely that any of them would give an accurate idea as to the true incidence of malignant disease. In addition it would be unfair to state the incidence of deaths from malignant disease in relation to total deaths in this hospital, or to state the number of cases in which malignant growth was noted at autopsy in relation to the total number of cases in which autopsy was done. In regard to the latter point, for example, autopsy figures at the Los Angeles Children's Hospital are distorted by the high incidence of cases of congenital heart disease, which is noted in over 30 per cent of all autopsies. It was considered, therefore, that if some non-fatal condition were picked, a comparison, although not necessarily of importance, might be of interest. As a result, it was decided to compare the number of patients who had malignant disease with the number admitted for tonsillectomy. It was somewhat surprising to note that the ratio was 1:18 (371:6,742).

Table 3 lists the cases of miscellaneous malignant tumors. Some of these cases are, of course, included in the anatomical listing. It is interesting to note that in only three of the 371 cases (0.8 per cent) was the tumor of epithelial origin.

Relatively few pediatric tumor analyses are available for comparison with the present series. In addition, certain specialized hospitals that receive patients with certain kinds of malignant disease do not include data on the age of the patients in statistical reports. It is also difficult to obtain figures as to the incidence of childhood cancer from general hospitals, where the pediatric material may be diluted by the greater numbers of adult cases. The best reports obtainable are from the following sources: Los Angeles Children's Hospital, Washington Children's Hospital,[1] Boston Children's Hospital,[1] Children's Memorial Hospital in Chicago,[1] the University of Chicago,[1] the sum of three series from three other reports[2, 4, 7] and from statistics obtained from the Metropolitan Life Insurance Company.[7] Data from these sources are listed in Table 4. It can be seen that although there are some disparities (due perhaps chiefly to selective admittance of patients with certain types of cancer) there is in general noteworthy agreement as to the relative frequency of involvement of the various anatomical sites.

In Table 4 lymphoma includes leukemia, all types of lymphosarcoma and Hodgkin's disease. Under central nervous system are included all gliomas in the Los Angeles Children's Hospital series, and certain other rarer tumors in other series, such as craniopharyngiomas. Bone tumors are assumed to be primary, but such was the nature of reports in certain series that the author cannot be certain on this point. Tumors of the kidney in the Los Angeles series are limited to Wilms' tumors and one unclassified sarcoma. It is likely that in some other reports neuroblastomas in the region of the kidney are included. Eye tumors include retinoblastomas.

The large number of miscellaneous tumors, both in the group of three series and in the Metropolitan Life statistics, is noteworthy. It would be interesting to know how many of the miscellaneous tumors in both groups were neuroblastomas and how many tumors of the eye are included in Metropolitan's miscellaneous group. It would seem likely that there are a number of each, if the figures from the other institutions are indicative.

The low incidence of bone tumors reported from the various Children's Hospitals as compared with the incidence of such lesions noted in other series is another interesting feature. It is conceivable that specialized orthopedic hospitals receive the great

TABLE 3.—*Miscellaneous Tumors, Los Angeles Children's Hospital (Eight Years—1943-1950)*

	No. Cases
Angiosarcoma	9
Sarcoma, unclassified	8
Carcinoma, adrenal	2
Sarcoma, kidney, unclassified	2
Neurofibrosarcoma	2
Sarcoma botryoides	1
Chondrosarcoma	1
Glioma, optic nerve	1
Lipomyxosarcoma	1
Fibromyxosarcoma	1
Embryoma, testicle	1
Dysgerminoma, ovary	1
Melanoma, eye	1
Synoviosarcoma	1
Osteogenic sarcoma	1
Ewing's tumor	1

TABLE 4.—*Anatomical Sites of Malignant Disease in Children as Reported from Various Sources*

	Children's Hospitals															
	Los Angeles		Washington		Boston		Chicago		U. of Chicago		(3 series) *		Metro. Life		Total	
	No. of Cases	% of Total	No. of Cases	% of Total	No. of Cases	% of Total	No. of Cases	% of Total	No. of Cases	% of Total	No. of Cases	% of Total	No. of Cases	% of Total	No. of Cases	% of Total
Lymphoma	203	55	71	53	60	29	63	62	24	24	182	16	649	45	1252	36.0
Central Nervous System	66	18	14	10	90	42	16	16	63	64	339	30	264	18	852	24.5
Bone	3	1	3	2	—		—		—		236	21	88	6	330	9.5
Kidney	26	7	25	19	60	29	7	7	—		95	8	106	8	319	9.1
Eye	22	6	6	5	—		—		—		96	9	—		124	3.6
Neuroblastoma	24	6	11	8	—		8	8	7	8	—		—		50	1.5
All others	27	7	4	3	—		7	7	4	4	175	16	336	23	553	15.8
Totals	371		134		210		101		98		1123		1443		3480	

* Combined data from three reports[2, 5, 8].

bulk of cases of this type. It is unfortunate that so many "miscellaneous" tumors appear in the reported series—15.8 per cent of the total. It is probable that some of them fit into the other categories listed. It is also possible that if there were more detailed report on tumors included as "miscellaneous," some other specific type of tumor (such as angiosarcoma in the Los Angeles series) might assume a position of importance.

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Evaluation of a New Method of Dust Control

M. Coleman Harris, M.D., *Vallejo*, and Norman Shure, M.D., *Los Angeles*

SUMMARY

Microscopic dust sampling was done to determine the amount of dust in the homes of six patients who were sensitive to house dust and who had allergic disease that was intractable to treatment. One case was subsequently excluded from the study because of extraordinary circumstances. The remaining five cases were studied with repeated dust counts before and after a water-and-oil emulsion was sprayed in the patient's bedroom to immobilize house dust. In all five cases, the patients had dramatic relief of symptoms after the spraying was done. In four out of five, there was concomitant reduction of the amount of dust in the air as determined by microscopic counting of the dust particles on a glycerin-coated slide. In the fifth case, relief of symptoms was not accompanied by reduction of dust on slides, but investigation revealed an error in control of exposure of the slides.

ALTHOUGH there may be some question regarding the efficacy of desensitization with house dust extract for treatment of allergic disease, there is unanimity of opinion regarding the importance of house dust as an etiological factor in the production of numerous allergic symptoms. Logically, the most effective method of treatment in such cases has been to eliminate, diminish or control in some manner the dust in the immediate atmosphere of a person who has allergic reaction to it. For a long time allergists have been instructing dust-sensitive patients to eliminate as much dust as possible from their environment by proper and frequent cleaning, ventilation, use of dust-impervious encasings and the avoidance of articles which are likely to harbor dust.[6] In this so-called dustproofing, which has been partially successful, the major emphasis has been directed at the bedroom on the theory that in this room the patient is exposed to the greatest concentration of allergenic dust for the greatest period of time.

It must be emphasized at this point that the term "house dust" is a generic one actually meaning atmospheric particles, apart from pollens, likely to cause allergic reactions—not merely particles of earth, but rather a mixture of dirt, feather particles, cotton, kapok and wool fragments and, indeed, almost anything else likely to be floating in the air of a room. The origin of house dust is worthy of some discussion. First, of course, the dust that may enter a room through an open window may consist of any particulate matter such as street dust, coal dust and chalk dust. Then, particles of wool from the rug on the floor are likely to be scuffed by the feet and raised into the atmosphere, as are particles of cotton linters dropping from an ordinary mattress. Fragments of disintegrated feathers escaping from loosely encased pillows, dander and hair from house pets, scales of moths and other insects, human hair, cattle hair and jute from rug pads, bacteria, molds, tobacco particles, parts of plants, insecticides and lint from clothing are among the things which make up what is loosely called "house dust."

Whatever the origin of this dust it collects on furniture, rugs, draperies, picture frames, ornaments, toys and many other surfaces within the room. Present methods of house dust control are directed mainly at preventing circulation of the particles in the air by cleaning surfaces with a damp cloth, eliminating articles of furniture which are likely to produce, collect and harbor dust, sealing or filtering to prevent the entry of dust from outdoors, and encasing in tightly seamed covers such articles as pillows and mattresses that might shed cotton and feather particles.

As these methods have been only partially successful, it would appear that a more efficient method of control would be one which would not pretend to eliminate house dust from a room, but rather would keep the dust settled and sealed so that it could not become airborne. Such a method—it originated in attempts to control the spread of respiratory diseases among crowded troops in World War II—has become available.

During the early phases of the war, a serious problem of respiratory infection was encountered, resulting from relatively crowded living conditions of thousands of men in various military establishments. At the outset of the conflict, both Great Britain and this country established groups of qualified medical authorities to study this problem and, if possible, to devise methods to reduce the incidence of respiratory infections in barracks, hospitals and other crowded areas. It had previously been established by the work of Wells and co-workers[7, 8, 9, 10] that respiratory infective agents are usually transmitted, via the air, from an infected person to a healthy one—not only in direct inhalation of infected droplets discharged in coughing or sneezing, but frequently in breathing dust made up in part of infected droplets that had dried. Wafting these particles into the air by sweeping, ventilating, vacuum-cleaning, shaking of bedclothes and similar operations is of prime importance.

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Of several methods investigated to control airborne bacteria, and incidentally dust, the most effective was immobilization of the particles by coating floors, bedclothes and other dust-producing surfaces with oil. The procedure employed was to spray an emulsion of white mineral oil in water, using Triton NE (a 30 per cent aqueous solution of an aryl-alkyl-polyether alcohol) as an emulsifying agent.[3, 4, 5]

There is general agreement that these oiling procedures are effective. Loosli[5] reported that "extensive studies by English and American investigators have shown that oil is the most highly effective and economical compound for the treatment of surfaces and fabrics for the suppression of dust and lint."

Extension of the use of this oiling method to control allergenic house dust seems a logical procedure. Using an oil compound in paste form, emulsifying it in warm water with an egg beater, then distributing it with a fine-holed garden water pot, Coca[1] applied the oiling process to the homes of six dust-sensitive patients. He used slowing of the pulse, lowering of blood pressure and relief of other symptoms as criteria and concluded that immobilization of house dust by this oiling method was an effective procedure in the treatment of patients with allergic disease caused by dust. At the 1950 meeting of the American Academy of Allergy, Arbesman, reporting for the therapeutic committee, stated that the oiling procedure was a valuable adjunct in the treatment of house dust sensitivity. So far as is known, there have been no controlled experiments performed to correlate and determine the actual dust count of a room before and after an oiling procedure and to relate them to relief of allergic symptoms.

The purpose of the present study was to evaluate the efficiency of immobilization of allergenic house dust in a room as judged by actual dust sampling before and after treatment of a room with an oil-and-water emulsion applied to rugs, draperies and bedclothing.

Bedrooms of dust-sensitive patients who had not responded satisfactorily to the accepted methods of treatment and control were chosen for this experiment. The material used for "oiling" was a mixture of (1) silicone oil, a material used as an anti-foaming agent in non-carbonated beverages, (2) triethylene glycol, (3) diethylene glycol monoethyl ether, (4) mineral oil, USP, (5) sodium nitrite, (6) alkyl dimethyl benzyl ammonium chloride (employed in minute amounts for its fungicidal action in the initial phase to preclude the growth of fungi on the water-wetted fabrics during the six- to 12-hour drying period). This is a liquid preparation that has only to be mixed with water before it is applied.* Dust counts were done in individual homes in circumstances as uniform as possible.

The most extensive literature on dust sampling methods is in connection with occupational pulmonary diseases.[2] For the control of pneumoconiosis, the generic term which includes silicosis, silicatosis, anthracosis, siderosis, and asbestosis, it is important to know the nature of the dust, the particle size, quantity of dust in the atmosphere and length of exposure to dusty air. For this purpose, very exact and complicated methods of dust sampling were devised. These include those of condensation, filtration, electrostasis, resistance, impingement, dust-counting photo-electric cells and petrographic methods.

As the study was primarily to determine the effect oil-spraying might have upon the amount of dust in the air of a room, it was felt that counting dust particles on glycerin-coated slides exposed for measured periods in a bedroom before it was sprayed, on slides exposed in the same room after the spraying, and on slides exposed concurrently in a contiguous room which was not sprayed would supply adequate data. It was recognized, of course, that the number of particles settling on a slide during a given time depends not only on the number of particles in the air, but also on the rate at which they settle; and that particles of dust or lint which have been impregnated with oil will settle more rapidly than will others. The authors were also aware of the conclusions reached by Forbes, Davenport and Morgis[2] in an exhaustive review of the literature with a bibliography of 657 references. They stated: "A condition as to air dustiness found in one sample in a certain place is unlikely to be anything like another sample taken immediately afterwards in the same place and in the same manner; this is true where the sampling is done instantaneously by grab method or over a period of minutes. In other words, the technique of determining quantity of dust particles in the air is by no means definite, accurate, fair or dependable, not only as regards conditions between different [industrial] plants but between time periods in the same place in any one plant." However, the results of preliminary studies indicated that if a glycerin-coated slide were exposed in a room for a period of six consecutive hours the collection of dust particles on the slide would be sufficient to be of statistical significance for the purpose of the present study.

PROCEDURE

Four slides were exposed in each of two bedrooms in six houses in which patients lived. They were placed in the four quadrants of the room in approximate juxtaposition, at a height of three to five feet. After normal dusting and cleaning was carried out, the windows and doors of the rooms were closed, and the slides were exposed for six hours. No one was permitted to enter the rooms during that period. Three such exposures, on three successive days, were made and the dust particles on the slides were counted. Subsequently, one of the two rooms under investigation—in all cases the room in which the patient slept—was dust-proofed with Allergex® by spraying the diluted emulsion into rugs, draperies, upholstered furniture and mat-

*This product is marketed under the trade name of Allergex and was supplied for this study through the courtesy of Mr. Irwin Cornell, the Carnegie Chemical Manufacturing Company, Los Angeles, California.

TABLE 1.—*Average Number of Dust Particles per Low Power Microscopic Field on Slides Exposed in Patient's Bedroom Before and After Spraying, as Compared with Count on Slides Exposed Simultaneously in Another Bedroom, in Same House, Not Sprayed.*

EXPOSURE	Case 1*		Case 2		Case 3		Case 4		Case 5		Case 6	
	PBR†	CBR†	PBR	CBR	PBR	CBR	PBR	CBR	PBR	CBR	PBR	CBR
Before Spraying												
First	326	265	54	80	37	40	132	122	76	112	142	150
Second	294	280	62	66	26	51	118	130	82	116	158	125
Third	310	275	66	71	38	32	126	110	90	124	150	100
After Spraying												
1 day	.....	.....	60	60	8	56	6	92	9	108	15	128
3 days	.....	.....	72	87	6	48	10	120	6	132	17	196
7 days	.....	.....	68	76	4	59	15	116	11	145	20	101
1 month	.....	.....	58	82	10	61	13	138	15	103	25	126
3 months	.....	.....	65	89	8	50	9	114	19	150	42	184

* Excluded from study because dust was greatly increased by excavation project nearby.
† PBR = Patient's bedroom; CBR = Control bedroom.

tresses. An ordinary compressed air paint sprayer was used. The other bedroom was not so treated, but in most of the homes the treatment was applied to the entire house exclusive of the control bedroom. Slides were again exposed in both the treated and the untreated bedrooms. Slides were again exposed in both the treated and the untreated bedrooms one day, three days, one week, one month and three months after the application of Allergex. The technique of exposure and of dust counting was the same on all occasions.

The slides were viewed under the low-power objective of a microscope. At least ten such fields on different areas of each slide were counted. The average of these was the accepted count. In those instances in which the number of particles was extremely high, the counts were estimates based on a count of a segment of the field.* No attempt was made to identify the kind of particles (dust, feathers, wool, cotton, etc.) but each fragment from 0.5 to 100 microns in size was included in the count.

RESULTS

Results of the dust sampling before and after oil treatment are outlined in Table 1. The data on Case 1 were distorted fortuitously and for that reason were excluded from this study. In that case, after exposure of the slides prior to oil treatment, it was noted that the number of dust particles on the slides was enormous as compared with the amount of dust in other cases in this study as well as with other cases in the authors' experience. Investigation revealed that during the period of preliminary exposure of the slides, a building site adjacent to the home was being excavated. Obviously, this case was unsuitable for the study. However, an interesting observation in this case was that during the period of excavation, the symptoms of the patient were greatly exaggerated. It is felt that this case is significant for two reasons. One, it appears to verify the validity of the dust-sampling technique used. Second, it emphasizes the importance of external factors such as excavations, winds, etc., on the symptoms of the patient as well as on the amount of dust in a room sealed by ordinary methods.

In Case 2 (Table 1) it will be noted that there was no decrease in the amount of dust in the patient's bedroom following the use of Allergex. The patient, however, had pronounced relief of symptoms. Investigation after the studies were concluded revealed that, during the exposure of the slides following the oiling procedure, two young children in the house went in and out of the bedroom several times without the mother's knowledge.

CASE REPORTS

CASE 2, *Table 1.* The patient, seven years of age, was first observed in May 1949 with complaint of stuffiness of the nose, episodes of hacking cough with some wheezing and occasional watering of the eyes. Upon physical examination the only abnormalities noted were allergic reaction in the nasal mucosa and mild conjunctival hyperemia. Results of skin tests were positive for the common local grass and weed pollens, house dust and molds. Desensitization treatment was instituted with complete subsidence of the hacking cough and stuffiness of the nose. During the course of this treatment the symptoms referable to the eyes became aggravated and in May 1950 an ophthalmologist was consulted. In smears and scrapings from the conjunctivae, a preponderance of eosinophils and the presence of eosinophilic granules were noted. More frequent injections of larger doses of antigen were given. This resulted in some relief of symptoms, but itching of the eyes and the presence of a stringy secretion persisted. After the patient's bedroom was sprayed with Allergex and water there was rapid relief of symptoms and disappearance of discharge. At the time of this report, there had been no recurrence.

CASE 3, *Table 1.* A 35-year-old motion picture script writer had been under the care of two otolaryngologists for treatment of vasomotor rhinitis for a period of three years. The principal complaint was paroxysmal attacks of sneezing, stuffiness of the nose and continual rhinorrhea, most pronounced during the early morning hours. Upon physical examination, the previous diagnosis was confirmed. Numerous eosinophils were noted in a smear of material from the nose. Skin test reactions were negative with the exception of a four plus reaction to dust. Desensitization and the institution of dust precautions gave partial relief, but the symptoms continued until the patient's home, with particular emphasis on the bedroom in which he slept, was treated with Allergex. (One bedroom was not sprayed, as is noted in Table 1.) Immediately after this procedure the symptoms

* The slide counts in this study were done by Orville J. Golub, Ph.D., of the Bio-Science Laboratories, Los Angeles.

abated. Desensitization was discontinued. To the date of this report there had been no recurrence of symptoms. When last observed, the nasal mucous membrane was normal.

CASE 4, *Table 1*. A male student 15 years of age had had some form of allergic disease nearly all his life—eczema in infancy and hay fever and asthma from the age of nine. When first observed, the patient had been under the care of an allergist, had had sensitivity tests on several occasions, and was being immunized against pollens and dust with but partial success; the hay fever was relieved but the asthmatic paroxysms still occurred at irregular intervals. From the history it appeared that the attacks were worse during weekends when the family went to a summer home at the beach. The parents said that it was difficult to free the summer home from house dust since it was closed and unoccupied during the week. The house (one bedroom excepted) was dust-proofed with Allergex and from that date on the patient had no more asthmatic attacks. The hay fever symptoms remained about the same.

CASE 5, *Table 1*. The patient, a nurse 33 years of age, complained principally of severe bilateral frontal headaches that occurred mostly in the evening and early morning hours. The condition had existed six years. Results of physical examination, with particular attention to the nasal passages, were essentially normal, and no abnormality was noted in x-ray films of the sinuses. In examination of the blood, eosinophilia (7 per cent) was noted. Skin tests for allergic sensitivity were carried out and there was a two-plus reaction to dog epithelium, chicken feathers, goose feathers, and house dust. Dust precautions, substitution of rubber foam pillows for feather pillows in the bedroom, and removal from the bedroom of all upholstered furniture that contained feathers was effected. At the same time immunization against mixed feathers and house dust was started. There was no history of contact with dogs. At the end of seven months of therapy, there was no discernible change. The bedroom and the rest of the house except one bedroom was then dust-proofed with Allergex, following which the patient had pronounced relief. Immunization was discontinued but the avoidance of feather contact was adhered to. When the patient was last observed, the headaches had not returned.

CASE 6, *Table 1*. A 15-year-old girl who had been under medical care seven years for bronchial asthma had not benefited from treatments given by several allergists. Skin reactions to allergenic agents were negative except for three plus reaction to cat epithelium and house dust. Dust immunization had been carried out and dust precautions and the avoidance of cats had long been adhered to but with only partially good results; use of antiasthmatic mixtures, with occasional injection of epinephrine, still was necessary to keep the patient free from attacks or to relieve dyspnea. After the patient's home (one bedroom excepted) was treated with Allergex, she had considerable relief: Wheezing was much less pronounced, the breath sounds became nearly normal, and the rales abated altogether. All other treatment was ultimately discontinued and the patient, at the time of report, had had no attacks in a period of six months.

CONCLUSIONS

Certainly, a study of this nature is not necessarily conclusive. First, the symptoms of allergic disease are subject to many variables and any interpretation of the cause of relief is open to question. This, of course, is true of any clinical study. Although the number of cases studied in this series is small, it is felt that since the cases chosen were resistant to good, accepted management, the dramatic relief following use of Allergex spray for dust-proofing can reasonably be considered indicative. Second, the method of dust sampling used in this study (or, as a matter of record, any technique of microscopic counting, including techniques accepted for counting other allergens, such as pollens and molds) may not always give accurate data.

However, despite the possible inaccuracies implied in a study of this nature, several conclusions can be drawn. First, in one case (Case 1, Table 1) in which unusually high counts were obtained, the dust sampling method used was validated, at least in part. Second, in all cases the patients had dramatic relief of symptoms following the dustproofing of their rooms with Allergex emulsion. Third, in four of the five cases there was a decrease in the number of dust particles counted on exposed slides concomitant with relief of symptoms. In the one case in which relief of symptoms occurred without accompanying decrease in dust (Case 2, Table 1) an error in technique was noted. In the authors' opinion, proper application of Allergex will reduce the amount of dust in a home and will serve as a useful and important adjunct in the treatment of allergic disease due to house dust sensitivity.

2600 Alameda Street.

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The Problem of the Mentally Defective Child

PETER COHEN, M.D., *San Francisco*

SUMMARY

Continued effort is necessary not only to prevent mental deficiency but to find methods of treating it. Meanwhile, physicians must have a keener appreciation of the feelings of the parents about their retarded children and must interpret the implications of the problems in a way the parents can understand. Further community effort is necessary to provide institutional and foster home care for those who need it. Educational and training programs should be extended and developed for all those who can benefit from such programs.

The problem of mental deficiency is not that of the parents alone, nor of physicians, nor of the psychologists, nor of the social workers, nor of the educators. It is a problem which requires the cooperation of all these groups for solution.

FROM time to time every physician is faced with the problem of how to handle the family of a mentally defective child. How much should he tell them? What advice should he give them about keeping the child at home? In many instances there is nothing that can be done for the child, but there is a good deal that can be done for the family. Experience at the University of California Hospital, in both the pediatric outpatient department and the cerebral palsy clinic to which many defective children are referred, indicates that the approach to the problem of the mentally defective child by many physicians—both general practitioners and pediatricians—leaves much to be desired.

The following discussion is designed to give an approach to this problem which has met with some success.

CLASSIFICATION

The following classification of intelligence is taken from Terman:

Range in I.Q.	*Classification*
0- 25	Idiot
25- 50	Imbecile
50- 70	Moron
70- 80	Borderline deficiency
80- 90	Dullness
90-110	Normal or average intelligence
110-120	Superior intelligence
120-140	Very superior intelligence
140 and above	Genius or near genius

From the University of California School of Medicine, Cerebral Palsy Program, Division of Pediatrics.

Presented before the Section on Pediatrics at the 80th Annual Session of the California Medical Association, Los Angeles, May 13-16, 1951.

This presentation is concerned with the children who fall into the first three groups—that is, idiots, imbeciles, and morons.

INCIDENCE

At a meeting of the New Jersey Institute of Mental Deficiency held at Rutgers University in October 1950, Dr. Lloyd N. Yepsen, director of classification and education of the New Jersey State Department of Institutions and Agencies, stated that there were 1,500,000 mentally defective inhabitants in this country. This is 1 per cent of the population. However, only 10 per cent of the country's mentally deficient are in institutions. The cost to the taxpayers for caring for these persons is staggering—$1,500,000,000 a year. An additional 2 per cent of the population is in the borderline group.

FACILITIES IN CALIFORNIA

There are four state institutions in California for mental defectives: Sonoma State Home, Pacific Colony, and two smaller units, at DeWitt and at Modesto. The enrollment in these institutions as of March 1950 was: DeWitt, 813; Modesto, 460; Pacific Colony, 2,016; Sonoma, 3,363; total, 6,652.

Private institutions provide care for an additional 800 persons, and there were approximately 11,000 children enrolled in special classes for the mentally retarded as of the end of the school year 1949-1950. In addition, the state provides supervisory service to approximately 1,000 persons previously institutionalized. There are an estimated 2,000 persons on the waiting list for the state institutions. Institutionalization has been recommended for many more children but, because of the long waiting lists, parents have not made any attempt to apply for such care. Additional construction is now under way, or planned, to provide more institutional care for mental defectives. When this has been completed it will be possible for the state to provide institutional care for approximately 10,000 children. This, however, will still not meet the needs.

PREVENTION AND TREATMENT

Alleviation of the problem of mental deficiency is partly dependent on recognizing and eliminating the causes, and averting the occurrence of such conditions. In recent years there has been a good deal of interest in the prevention of congenital and developmental anomalies. The report of Gregg,[5] regarding the effects on the fetus of rubella in the pregnant woman, has focused attention on infections in general in the early part of pregnancy as a possible cause of mental deficiency, cataracts, and congenital heart disease. Numerous reports have confirmed this effect of rubella. Permitting girls to be exposed to

rubella before reaching the childbearing period is an obvious answer to this problem.

Another infection which causes little or no illness in the mother but causes severe damage to the fetus is toxoplasmosis. In addition to mental deficiency, this infection produces hydrocephalus, chorioretinitis, visceral changes, and is responsible for convulsions in the victim. The diagnosis can be made by finding roentgenologic evidence of calcification in the brain substance, by specific skin tests, and by immunologic studies. Further work must be done in order to recognize carriers of infection and to prevent invasion of the fetus.

More knowledge is needed with regard to the prevention of cretinism and mongolism. Benda[3] proposed the thesis that mongolism is associated with insufficiency of pituitary function, just as cretinism is due to thyroid deficiency. Nevertheless, endocrine substitution therapy has not produced beneficial effects in cases of mongolism.

With the demonstration that Rh incompatibility is responsible for erythroblastosis fetalis,[7] there has been an increased interest in this problem. The only complication is kernicterus, occurring in 15 per cent of the infants who survive, which is characterized by athetosis and in some cases by mental deficiency. Increased recognition of the possibility of Rh incompatibility, with prenatal blood studies and preparation to treat the infant immediately after birth, should lead to protection of the infant. A new approach to the problem is suggested by the work of Damashek and co-workers[4] who showed that continued administration of adrenocorticotropic hormone (ACTH) in cases of hemolytic anemia with auto-immunization results in pronounced reduction of antibody activity. Theoretically, then, when trouble is anticipated, it might be possible to treat a pregnant woman in the last few weeks of pregnancy with ACTH or cortisone, in the hope of interfering with Rh antibody activity. If there is an interference with the antigen-antibody reaction, as has been suggested, then treatment of the affected infant for the first few days of life with ACTH or cortisone might be of value. The availability of these drugs is too recent to have permitted enough clinical trial to attest their value for this purpose.

In addition to the prenatal conditions which produce mental deficiency, the factors of birth which may cause brain damage must be considered. Adequate prenatal and obstetrical care will decrease the number of cases of mental deficiency associated with anoxia and trauma at birth.

Prevention of accidents and infections which attack the central nervous system in the postnatal period will also work toward reducing the numbers of persons with mental deficiency. On the other hand, improvement in techniques for saving the lives of babies traumatized at birth, and the availability of drugs for treating types of meningitis which were once considered fatal, results in saving many infants who may be mentally deficient because of severe brain damage.

Although Zimmerman and his co-workers[9] indicated that glutamic acid has a beneficial effect in the treatment of the mentally deficient, the author's experience has not borne this out. Other investigators[6, 8] have been unable to confirm any significant improvement with this drug.

More recently, there have been attempts to produce mental improvement by increasing the flow of blood to the brain. Beck and co-workers[1] described a method of anastomosing the external carotid artery and the internal jugular vein. Belnap[2] reported an improvement of slight degree in 37 per cent of mentally defective patients operated upon—the greatest increase in intelligence being observed in the 40 to 60 I.Q. range. However, Beck indicated that this is a new approach to the problem, rather than an acceptable and complete solution. Even if this is borne out by other investigators, it seems that the little improvement obtained in the group with so little intelligence would not be significant enough to warrant subjecting the retarded child to such an operation.

DEALING WITH PARENTS

Most parents visiting a physician with a mentally defective child, even though they suspect the child's retardation, often feel that this is a temporary situation and hope that all that is needed is a specific medicine or the proper school or teacher. At first they feel sure that the child who is slow will eventually catch up. It is only after many years of watching the child's slow rate of development that they finally realize that the child is destined to be permanently retarded.

Often this lack of understanding of the prognosis is aided and abetted by the physician, who refuses to tell the family the true state of affairs for fear of upsetting them, even when he suspects it. Meanwhile, the parents go on expecting the child to outgrow the condition; or, because of a mistaken diagnosis of hypothyroidism, the child is placed on a long course of thyroid therapy which temporarily raises the hopes of the parents. Often parents who find out the true state of affairs only after several years indicate their severe resentment of the physician who has not told them what to expect.

On the other hand, there is the physician who, recognizing serious retardation after a cursory examination, will tell the family very bluntly the nature of the child's condition and advise immediate institutionalization without considering the family's feelings in the matter. As a result of this, the parents often leave, feeling bitter toward the physician, and seek other physicians or non-medical practitioners who will tell them their child will eventually be like others.

No matter how obvious the retardation is to the physician, he should take a careful history and do a complete physical examination, as he would for any other child. A psychometric examination by a psychologist should also be done. Other examinations, such as roentgenograms of the skull, electroencephalograms, and pneumoencephalograms should be carried out as indicated. After a complete evaluation has been done, the family is more likely to accept

the physician's appraisal of the child's limitations and prognosis.

In advising the family of the results of the psychometric testing, such terms as idiot, imbecile, or moron should be avoided. These terms have connotations which the layman finds difficult to accept. It would be better to express the result in terms of mental age. One can often get the parents to correctly estimate the mental age of the child, particularly if there are other children in the family. The parents would be indignant if they were told their six-year-old child, with an I.Q. of 33, was classified as an imbecile, but they readily accept the statement that he was able to perform no better than a two-year-old, since they themselves have observed this.

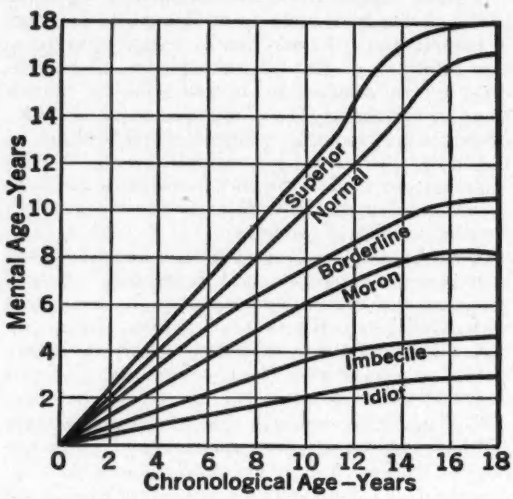
Parents may derive false hope because their defective child eventually learns to walk or say a few words. This makes them feel that all will be well, particularly if a physician has told them that the child will never improve. The child's new attainments make them feel that the physician was wrong, and that their child will eventually catch up and be normal. Of course, what the physician meant was that the child's I.Q. would not improve; he neglected to explain that the child would develop within his own limitations. A convenient, and visual way of demonstrating to parents what a child's progress in mental development will be, is by means of a chart which can be drawn very easily (see Chart 1). In this way, the prognosis and mental ability can be demonstrated very quickly and clearly.

A physician should be careful in recommending institutionalization, since placement in state institutions for the mentally deficient is difficult to accomplish immediately. These institutions are woefully overcrowded and they have long waiting lists. Furthermore, many families cannot accept the idea of placement away from home, at least on the first interview. Even when it seems the wisest procedure, it would be better to wait and not press the issue. In many instances, the parents eventually accept such advice but they do not feel they are doing the right thing and cannot avoid a feeling of guilt. In some cases, the families have made a good adjustment, even though the child is kept at home, particularly if it is an only child and there is no hope of having other children. There is no need to insist on institutional care in such instances, as long as the parents are willing and able to care for the child.

It may take several visits, over a period of months, before the impact of the child's condition finally registers on the parents. During this time the physician can be guiding the family, always honest and sympathetic in his approach, and answering questions as the family presents them. Parents cannot understand what is so obvious to the physician and it takes time for the implications to penetrate.

Parents usually want to know about the possible outcome of subsequent pregnancies. As most cases of mental deficiency are not familial or hereditary, it is possible to reassure the parents in this regard —without, however, guaranteeing the outcome.

Chart 1.—Mental growth of normal and subnormal children. Taken from Holt, L. E., Jr., and McIntosh, R.: Holt's Diseases of Infancy and Childhood, D. Appleton-Century Co., Inc., New York, 1940.



RECOMMENDATIONS

The ultimate answer to the problem is not necessarily that of providing more institutions for all mentally defective persons, although many more beds are needed for the many who cannot be domiciled and for whom families cannot afford private placement out of the home.

State institutions which are now caring for such persons should be providing more than a custodial program. By training and education some of the high grade defectives can be made more nearly self-sufficient and take their place in society. Improvement in training programs is now being made, under the direction of Dr. Frank F. Tallman, Director of Mental Hygiene for the State of California.

The development of foster homes for children who cannot be cared for in their own homes would relieve the state of the financial burden of providing facilities. Many families would be willing to pay for the care of their child in a private home, if such a home could be found.

Sheltered workshops should be organized for the older mentally defective persons who might be trained to do useful work under supervision and who would thereby be less of a burden to their families.

Sterilization should be considered for the child before he or she reaches adolescence, not only because of the danger of the hereditary transmission of mental deficiency but because of the danger of sexual attack by the irresponsible male and of sexual submission by the physically mature but mentally immature female.

School facilities should be developed in those communities where they are not now available, in order to provide the particular kind of schooling from which mentally defective children might bene-

fit. Just as the institutionalized child should receive proper training and education, so should similar opportunities be given the children who remain in their own communities, in order to make them as nearly self-sufficient as possible.

Parent training classes should be developed in communities under such auspices as Adult Education Division of the Public Schools. Such opportunities may also be developed around Parent-Teacher Association groups associated with the schools for the mentally retarded. These classes should provide parents with help in understanding the problems of their children and assistance in training the children for some useful purpose.

Members of organized parent groups can assist each other in meeting individual problems with their children. This can be particularly useful with professional guidance by someone familiar with the problems of the mentally retarded.

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Infraclavicular Chest Wall Tumors in Hodgkin's Disease

RALPH GOLDMAN, M.D., *Los Angeles*

SUMMARY

In six of 91 cases of Hodgkin's disease observed over a three-year period, a tumor mass filling the infraclavicular hollow was noted. It was on the left side in all instances. Although in four cases it was the only superficial manifestation of Hodgkin's disease for a long period, in all cases there were ultimately other areas of involvement. The lesion did not occur in any of 81 cases of lymphosarcoma observed concurrently.

NINETY-ONE patients with Hodgkin's disease were observed in a period of three years. In six of them a rounded mass below the clavicle (Figure 1), or an infiltration which filled out the infraclavicular hollow (Figure 2) was observed. This tumor was present on the left side in all cases, appeared to be infiltrative rather than lymphadenopathic, and was often accompanied by pain and sensory changes in the arm, and venous obstruction with edema. In one patient Horner's syndrome was present. No specific changes were noted in a roentgenogram of the chest other than an occasional slight increase in soft tissue density. This manifestation was not observed in a group of 81 patients with lymphosarcoma.

CASE REPORTS

CASE 1. A white male aged 21 first noted pruritus and malaise. A left cervical node appeared, followed by right cervical and axillary nodes and evidence of mediastinal widening. The diagnosis was made after biopsy of the left cervical node. The patient received roentgen therapy with some relief. After two years a left infraclavicular mass appeared which obliterated the infraclavicular fossa and gradually extended into the axilla. This was associated with numbness and tingling in the left hand followed by intense pain in the forearm and shoulder and, later, by anesthesia of the dorsum of the left hand and the lateral half of the fourth and fifth fingers. Atrophy of the left arm, forearm, and intrinsic muscles of the hand followed. Venous drainage was obstructed and this resulted in edema in the arm and the development of collateral venous circulation. There was little response to intensive roentgen and nitrogen mustard therapy. Six months later the mass was stony hard and measured 5x5x1.5 cm. At this time the patient was otherwise quite well. However, the course was gradually downhill and he died in another hospital three years after onset.

From the Medical Service, Veterans Administration Hospital, Los Angeles 25, California, and the Department of Medicine, Medical School, University of California at Los Angeles.

Reviewed by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions of the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

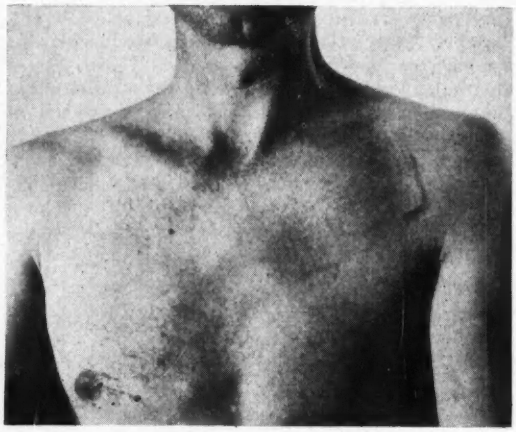

Figure 1.—Infraclavicular tumor mass. Note obliteration of infraclavicular hollow and absence of other cervical tumor masses.

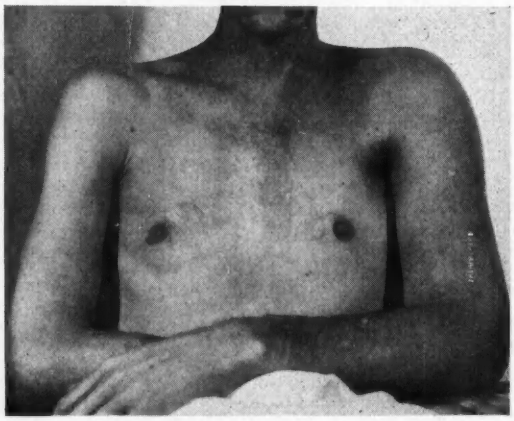

Figure 2.—Obliteration of infraclavicular hollow by flat infiltrating mass. Note the massive edema of the left arm. None of the other cervical lymph nodes were enlarged.

CASE 2. A 21-year-old white male noted night sweats, loss of weight, fever, malaise and fatigability. A lymph node biopsy was performed upon the appearance of generalized lymphadenopathy. Subsequent to the diagnosis the patient responded well to nitrogen mustard and roentgen therapy. A year later a rounded left infraclavicular mass appeared and was soon followed by the appearance of a left axillary mass. Roentgen therapy was directed to this lesion with good response.

CASE 3. Hodgkin's disease was diagnosed in a 52-year-old white male diabetic patient by lymph node biopsy. There was good response to both roentgen and nitrogen mustard therapy. Two years later the patient noted a swelling in the left infraclavicular area which was associated with intense

and increasing pain down the ulnar aspect of the left arm. Subsequently he began to have chills, night sweats and pain in the left side, radiating around the chest at the level of the ninth rib. Upon examination the patient was observed to be febrile and considerably deteriorated, and to have Horner's syndrome on the left side. He stated that during profuse night sweats no sweat formed on the left side of his face. A small lymph node was palpable in the left posterior axillary fold and there were shotty inguinal nodes. The patient did not respond to therapy, the mediastinal involvement progressed, and he died after two and a half years of illness. At necropsy it was noted that the infraclavicular mass was a fibrotic infiltration binding the subclavian artery and the brachial plexus and extending under the clavicle into the supraclavicular fossa. In histologic examination, almost complete destruction of neoplastic elements, presumably by therapy, was noted. Sparsely cellular, mature collagenous fibrous tissue, and scattered clumps of macrophages were observed. In examination of numerous lymph nodes throughout the chest and in the retroperitoneum the histologic pattern of Hodgkin's disease was noted.

CASE 4. A 20-year-old white male noted a cervical mass which was soon followed by generalized lymphadenopathy. The diagnosis was based on lymph node biopsy. The patient responded well to roentgen therapy with a remission for four years. Then a fullness was noted in the left infraclavicular region, associated with moderately enlarged left cervical and axillary nodes. This responded incompletely to roentgen therapy, and subsequently edema developed in the left arm. A year and a half later the infraclavicular mass, as well as a left axillary extension, had become woody hard. At this time it was also noted that the patient had anemia and pronounced proteinuria, which subsequently was found to be associated with cryoglobulinemia and depressed plasma albumin, resulting in massive edema. In roentgen examination of the chest, erosion of the proximal end of the left fourth rib was observed. The patient died seven years after onset with toxemia and massive pleural effusion.

CASE 5. A patient with Hodgkin's disease, diagnosed by biopsy, had evidence of involvement of the vertebrae, stomach, intestines, and lungs in addition to cervical and axillary adenopathy. These involvements responded more or less satisfactorily to roentgen therapy. Four years after onset an infraclavicular mass was noted on the left side. It was of a moderately soft consistency and was approximately 5 cm. in diameter. There was also a 1.5 cm. node palpable in the left axilla. The mass responded well to therapy. There were three recurrences, and each time there was good response to roentgen therapy. The patient died two years later, aged 32, of mediastinal obstruction and massive pleural effusion.

CASE 6. A patient with Hodgkin's disease, diagnosed elsewhere, was reported to have been successfully treated with roentgen therapy and nitrogen mustard. The patient was 29 years old when first observed by the author three years later. Features of advanced disease with cachexia and generalized lymphadenopathy were noted, but there was no hepatic or splenic enlargement. On roentgen examination an ulcer defect in the stomach was noted. Pleural effusions formed, and repeated tapping was necessary. A smooth, firm infiltration filled out the left infraclavicular fossa, and there was obvious venous obstruction with edema of the left arm and venous collaterals draining downward over the left side of the chest. The patient did not complain of pain directly referable to the presence of this infiltration. He died nearly four years after onset.

DISCUSSION AND CONCLUSIONS

The infraclavicular infiltrating tumor noted in six cases of Hodgkin's disease may prove to be a distinct clinical entity. The fact that the lesion was observed in six cases, only in association with Hodgkin's disease and always on the left side, suggests some unique anatomicopathological determining factor. It is, of course, unsafe to conclude that it can occur only on the left side, or that it cannot occur in association with lymphoblastoma of other types. The number of cases observed is small for statistical analysis, but it does seem that the incidence of such infraclavicular infiltrative localization is greater in Hodgkin's disease than in other lymphoblastomata. In fact, there appears to be less than one chance in ten that it is even one-quarter as frequent in lymphosarcoma as it is in Hodgkin's disease. It never occurred without other areas of involvement, but in four cases it was the only superficial manifestation for a long period in the course of the disease.

It is apparently not the same as the sternal node involvement described by Goldman,[1, 2] for in the 13 cases reported by him the lesion overlay the internal mammary artery, and in some cases it was on the right side, in some on the left. The author has observed two cases in which lesions of this kind occurred.

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CASE REPORT

Pulmonary Endarteritis Obliterans With Cor Pulmonale Simulating Congenital Heart Disease

Pulmonary Endarteritis Obliterans With Cor Pulmonale Simulating Congenital Heart Disease

JACK D. KIRSHBAUM, M.D., *Redlands*

PRIMARY pulmonary vascular endarteritis obliterans in children is exceedingly rare. Necrotizing pulmonary arteritis or so-called periarteritis nodosa occurring with congenital heart disease (Eisenmenger type) has been reported by Old and Russell[4] and Kipkie and Johnson.[2] Both cases occurred in 11-year-old boys. Brill and Krygier[1] reviewed reports of 20 cases of primary pulmonary vascular arteriosclerosis and noted that four of the patients were children 11 to 15 years of age. In these cases intimal proliferation was noted in the pulmonary arterioles, and there was pronounced narrowing or complete occlusion of the lumens, while in the small arterioles were thrombi of various ages and recanalization. In many of the cases complete obliteration and hyalinization of the capillary vessels was noted. There were no pathologic changes in the lungs, but enlargement of the right side of the heart was noted. Brill and Krygier concluded that the condition was the result of either infectious or degenerative change.

Harrison[3] experimentally was able to demonstrate lesions in the pulmonary artery of rabbits given intravenous injections of finely fragmented fibrin clot similar to that described in pulmonary vascular arteriosclerosis as a result of pulmonary emboli. Fibroelastic intimal thickening of the vessels, morphologically indistinguishable from that of spontaneous arteriosclerosis, was observed in the healed lesions. Harrison concluded that in some of the cases reported as primary pulmonary arteriosclerosis because of this histological appearance, the structure might actually have been the result of embolism.

The case to be reported is unique in that the vascular lesions were restricted to the pulmonary arteries. Rheumatic fever as an etiological factor could not be excluded. Shortness of breath, cyanosis, peripheral edema, tachycardia, cough, a harsh systolic murmur in the anterior axillary line, and a palpable systolic thrill suggested the presence of congenital heart disease. At autopsy, pronounced hypertrophy of the right ventricle was noted but there were no malformations.

CASE REPORT

A nine-year-old Mexican female child was admitted to the San Bernardino County Hospital May 29, 1950, with complaints of cough of increasing severity for one week, shortness of breath and fever for one day. There was some nausea and vomiting, and also some pain in the left ear. The patient had been in fairly good health until the present illness. The parents noted that the child had fever and that the breathing was rapid the day before admittance.

From the departments of pathology of San Bernardino County Hospital and Redlands Community Hospital.

Presented before the Section on Pathology and Bacteriology at the 80th Annual Session of the California Medical Association, Los Angeles, May 13 to 16, 1951.

The patient appeared to be chronically ill; she was slender and emaciated, the body weight approximately 35 pounds. The temperature was 101.6°, the pulse rate 148 and respiration 40 per minute. There was no discharge from the ears and the ear drums were clear. The pupils were regular, equal and reacted to light and accommodation. The teeth were in poor condition and many were missing. No abnormality was noted in the pharynx. There was an old skin scar on the left side of the neck, and the carotid artery on that side was large and pulsating. Lymph nodes in the neck were not enlarged. The chest was clear to auscultation. The abdomen was scaphoid. No tenderness was noted and there were no palpable masses. The heart rate was rapid and a grade II mitral murmur, heard best at the apex, was noted. The fingernails were curved, but there was no clubbing or cyanosis.

The clinical impression was that the patient had a mild upper respiratory tract infection, congenital or acquired heart disease, possibly rheumatic, avitaminosis, and, possibly, carotid aneurysm.

Erythrocytes numbered 4,900,000 per cu. mm., and the hemoglobin value was 75 per cent (12.9 gm. per 100 cc.). Leukocytes numbered 9,300—79 per cent neutrophils, 19 per cent lymphocytes, and 2 per cent monocytes. Results of urinalysis were within normal limits. In an electrocardiogram, sinus tachycardia and right axis deviation, considered abnormal, were noted. The nonprotein nitrogen content of the blood was 36 mg. per 100 cc.

In roentgen examination of the chest, the lung fields were observed to be clear and the cardiovascular shadow within normal limits. The primary pulmonary vessels at the hila were distended and engorged.

The child had been delivered by cesarean section at eight months in the San Bernardino County Hospital. (The mother had had chronic nephritis associated with toxemia of pregnancy.) The infant weighed 4 pounds 11.5 ounces at birth. There was a swelling on the left side of the neck beneath the mandible and over the left scapula, and on the back of the neck. A week after birth the mass was aspirated and a diagnosis of cystic hygroma was made. In January 1943, the child was a patient at the Children's Hospital in Los Angeles because of suppurative otitis media of the left ear and an abscess below the left ear. Under sulfonamide therapy the ear gradually dried and the abscess became smaller. Subsequently, the hygromic mass was opened and drained and the left carotid artery was ligated. In 1944 the cystic mass was removed and a pathological diagnosis of cystic hygroma was made. The child apparently did well until the present illness. There was no note of a murmur over the heart in the records of the many examinations of the patient.

The day after admittance to hospital, the temperature rose to 103° F. On the third day it was normal and remained normal. The morning after admittance rales heard in the right mid-lung field were considered probably caused by pneumonia. The suspicion of aneurysm of the left carotid artery was not substantiated, and the prominence of the pulsation of the artery was considered due to the absence of the sternocleidomastoid muscle, which had

been removed. Reaction to a tuberculin test was interpreted as positive, which raised the question of tuberculous pneumonia. After 18 days in the hospital the child was discharged with a diagnosis of primary juvenile tuberculosis. The parents were advised to keep her in bed at home.

The child was readmitted July 27, 1950, because of generalized edema associated with cough. A week before, the left side of the face and then the left leg became swollen. The child had been in bed, propped with pillows because of respiratory embarrassment. There was no pain around the heart, but there had been pain in the left leg for several weeks. The appetite had been poor.

Upon examination the patient was noted to be poorly nourished, very orthopneic and dyspneic. The abdomen was distended and the left side of the face was swollen. Dullness was noted in the apex of the left lung anteriorly. The remainder of the chest was hyperresonant. No rales were heard. The heart seemed to be enlarged to the anterior axillary line. There was a blowing, harsh systolic murmur at the apex, not transmitted, and a thrill was felt over the same area. The liver was palpable down to the umbilicus. There was pitting edema (++) of the legs up to the knees.

Erythrocytes numbered 5,850,000 per cu. mm. and the hemoglobin content was 15.6 gm. per 100 cc. Leukocytes numbered 4,850, with the cell differential within normal limits.

In roentgen examination of the chest (Figure 1) on August 2, 1950, generalized increase in the lung markings, suggesting congestion, was noted. The cardiac shadow was enlarged. In an electrocardiogram taken August 1, there was evidence of sinus tachycardia and right axis deviation.

The patient was given meralluride and digitoxin, ascorbic acid and ammonium chloride. On August 3 the erythrocyte sedimentation rate was 19 mm. in one hour. The child had fever and remained dyspneic. The pulse rate dropped to about 110 per minute. The apex beat was noticed in the third interspace. There was a harsh, blowing systolic murmur, and a diastolic and presystolic component at the apex. The murmur became shrill at the midaxillary line. The lungs, however, were clear.

On August 19 salicylates were given but caused vomiting. Digitoxin and acetylsalicylic acid also had to be discontinued. On August 23, the child became listless and apathetic, and gavage feedings were started. Two days later the heart murmur, harsh and high-pitched, was interpreted as being systolic at the apex, and it was also heard over the pulmonic area. Cyanosis was noted for the first time.

No conclusion could be reached as to whether the abnormalities in the heart were of congenital or rheumatic origin. On August 29 the child became afebrile. Another physician who examined the patient on September 7 made the following report: "Nine years of age, the patient had the body development of a child of five. She was definitely cyanotic. There was no clubbing of the fingers, lobes of the ears or nose. No increase in the number of capillaries in the conjunctiva or eye grounds was noted. The veins of the sublingual and pharyngeal areas were not abnormally engorged. Pronounced venous pulsation in the left side of the neck was dicrotic and not caused by an underlying carotid aneurysm. When the patient lay down, the veins on the right side of the neck filled. The lungs were clear throughout. The heart was definitely enlarged; the point of maximum impulse was in the fourth interspace at the anterior axillary line. In the third left interspace, just at the anterior axillary line, a very definite systolic thrill could be felt. The first and second sounds were well heard at all areas. There was a loud systolic murmur heard best at the third left interspace and transmitted into the axilla. No diastolic murmur was audible at this area. The apex of the heart was in the fifth interspace. Just inside the anterior axillary line, a systolic murmur of an entirely different pitch was audible. This murmur was not transmitted.

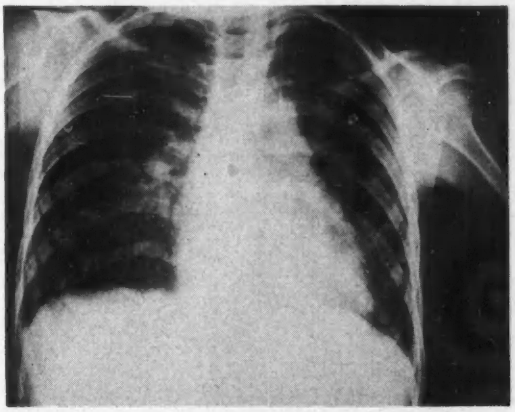

Figure 1.—In a roentgenogram of the chest an increase in the size of the heart shadow, and congestion and engorgement of the pulmonary vessels were noted.

The edge of the liver was palpated five fingers' breadth below the costal margin. It was moderately tender.

Definite evidence of right ventricular hypertrophy was noted in an electrocardiogram.

Under the fluoroscope the lung fields were observed to be clear in the periphery. The pulmonary arteries were prominent and pulsated fairly vigorously. The cardiac shadow was considerably enlarged, particularly in the region of the right ventricle. In the left oblique view a very good right ventricular shelf was observed, and it was noted that there was no enlargement of the left ventricle.

"In examination of the blood, slight polycythemia was noted. There was no leukocytosis. The erythrocyte sedimentation rate was 27 mm. in one hour."

The consultant's diagnosis was: (1) congenital heart disease; (2) interatrial septal defect; (3) right ventricular hypertrophy; (4) congestive heart failure confined entirely to right ventricular failure. He commented:

"The fact that the patient was poorly developed was the first consideration which led to the diagnosis of congenital heart disease. Pure right-sided heart failure without evidence of pulmonary disease is usually due to a congenital lesion involving the right side of the heart. The fact that the cyanosis did not come on until the second attack of heart failure was of significance. The systolic murmur and thrill, felt best in the third left interspace at the peristernal line, was strongly suggestive of overloading of the pulmonary circulation as a result of a shunt somewhere within the heart. The faint apical systolic murmur was probably secondary to moderate dilatation. It was possible to definitely rule out coarctation of the aorta, patent ductus arteriosus, transposition of the great vessels, and tetralogy of Fallot, since the lungs were well supplied with blood. A moderate degree of pulmonary stenosis, probably valvular, seemed probable." It was suggested that the patient be kept at rest, that large quantities of distilled water be given in order to prevent thrombosis, and that administration of digitalis be continued until all signs of heart failure had disappeared. The consultant suggested that a cardiac catheterization then be carried out because of the pulmonary stenosis, which he believed could be relieved. He felt that, with the stenosis relieved, the interatrial septal defect should not throw too great a strain on the right heart.

The child continued to be dyspneic, even while at complete rest. There was no edema noted in the genitalia or

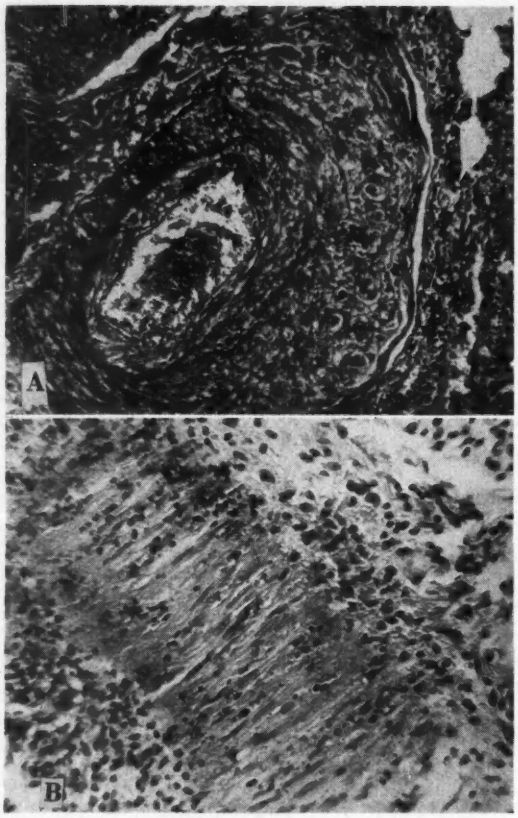

Figure 2.—*A*—A small muscular pulmonary artery. Note subendothelial proliferation, partial destruction of the wall and fragmentation of the elastic fibers. (Weigert's elastic stain). *B*—Higher magnification of the artery. The wall is infiltrated by lymphocytes. (Hematoxylin and eosin stain.)

sacral region or in the extremities. The condition of the patient became poor and she died September 14, 1950, four months after the onset of the acute symptoms.

AUTOPSY REPORT

The body, embalmed, was that of a slenderly built, poorly nourished 9-year-old Mexican female child, 44 inches (112 cm.) in length. There was no free fluid in the abdominal cavity. The lower edge of the liver extended 8 cm. below the xiphoid process. There was no clubbing of the finger tips or toes.

The right pleural cavity contained 500 cc. of a yellow fluid, and the left pleural cavity 400 cc. The pericardial sac was dilated and extended from the right costochondral junction to the left anterior axillary line. It contained about 25 cc. of clear fluid.

The heart weighed 170 grams (normal 110 grams). The large vessels were normal in location. The apex was made up by the right ventricle. The wall of the left ventricle averaged 8 mm. in thickness while the wall of the right ventricle was 10 mm. thick. The tricuspid valve was 85 mm. in circumference. There was pronounced dilation of the right auricle and the right ventricle. Circumference of the aorta was 37 mm., of the pulmonary artery 46 mm. There was an occasional fatty plaque in the intima. The mitral ostium was 42 mm. in circumference. The foramen ovale was closed; there were no evidences of a ductus arteriosus. Both coronary ostia arose from the aorta. The right ostium of the coronary artery was slightly larger than the left. Occasional fatty plaques were noted in the intima of the aorta. The myocardium was moderately firm and deep brown.

The right lung weighed 150 grams. The upper lobe appeared smaller than the middle and lower lobes. All the lobes felt firm. The pleura was smooth and glistening. When sectioned the parenchyma of the lung was observed to be dark purple and slightly moist with blood. The bronchi were everywhere free. The branches of the pulmonary artery appeared dilated, and the intima contained an occasional fatty plaque. The lumen was free. The left lung weighed 140 grams. The edges were crepitant and there were no remarkable abnormalities noted.

The liver weighed 620 grams. It was firm and the surface smooth. The sectioned surface of the parenchyma was dark reddish-brown with distinct acinar markings. The spleen, which weighed 80 grams, was firm and the pulp on sectioned surface was deep purple-red and moist. The follicles were distinct.

About equal in size, the kidneys together weighed 130 grams. The capsules were stripped with ease, leaving a smooth purple-tan surface. The average diameter of the sectioned surface of the cortex was 6 mm. The markings were distinct.

The brain was not examined. No abnormalities were noted in other organs.

Microscopic Examination

Heart: The muscle fibres of the left ventricle appeared narrow and the nuclei were distinct. In the epicardium there were occasional foci of lymphocytes. No abnormality was noted in the branches of the coronary artery and vein. Muscle fibers of the right ventricle were about four times the diameter of those in the left ventricle and many of the nuclei were large. There was loose infiltration of large mononuclear and polymorphonuclear cells into the epicardium and for a short distance into the myocardium. No Aschoff nodules were observed.

Pulmonary artery: In sections taken from the main artery and also from its branches, pronounced thickening of the wall was noted. Many of the endothelial cells were swollen and the intima was thickened and infiltrated with lymphocytes and large mononuclear cells. There was an occasional focus of fibrinoid necrosis in the intima. In a few places in the adventitia infiltrations of lymphocytes were noted.

Lungs: In sections taken from numerous areas, collapsed alveoli and dilated capillaries engorged with red cells were observed. Many of the bronchi were dilated, many were occluded by mucous and desquamated epithelial cells, many were surrounded by polymorphonuclear leukocytes, plasma cells and lymphocytes. In examination of the branches of the pulmonary artery, obliteration of the lumen by an active fibroblastic tissue rich in young capillaries was noted in many places. Fibrinoid necrosis of the walls of some of these capillaries was noted; in many such instances only a narrow slit of lumen remained. There was thickening of the walls, particularly the intima and media, of many of the arterioles; the elastic tissue appeared increased and thickened, particularly the external limiting membranes. In some of the arterioles the lumen was completely obliterated by the subendothelial fibrous proliferation (Figure 3) while in other muscular arteries there was obliteration and recanalization of the lumen (Figure 4). Some of the arterioles contained thrombi. In some of the arterioles the endothelial cells were proliferated and swollen and appeared to be hydropic. Only rarely observed in the arterioles was a suggestion of nodular thickening of the wall. In some of the branches in which proliferation of cells, particularly lymphocytes and monocytes, was noted, polymorphonuclear leukocytes were inconspicuous.

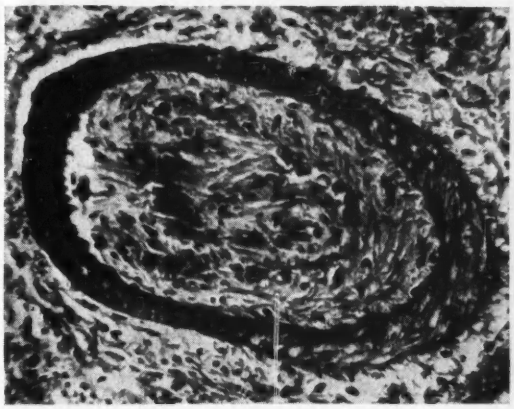

Figure 3. — Subendothelial fibrous proliferation completely obliterating the lumen of a small muscular pulmonary artery. (Weigert's elastic stain.)

One vessel was infiltrated with polymorphonuclear cells and lymphocytes rather typical of periarteritis nodosa. In some of the vessels the changes were much like those observed in the healing stage of periarteritis nodosa.

DISCUSSION

In the case here reported, the lesions were restricted to the pulmonary arterioles. A variety of pathologic changes were noted. Pronounced endothelial proliferation was noted in the earliest lesion. Many of the cells were ballooned with a vacuolated cytoplasm. These changes were followed by subendothelial fibrous proliferation. In some of the arterioles there was lymphocytic infiltration throughout the media and adventitia, while the majority of the smaller vessels were thickened, chiefly by subendothelial fibrosis, to such an extent that the lumen was narrowed or completely obliterated. Recanalization of the lumen was noted in some of the obliterated arterioles.

The media of the main pulmonary artery appeared to be vacuolated and there were cystic areas. In the main branches, focal thickening of the intima was frequently noted.

The sclerosis of the pulmonary arteries and the pulmonary arterioles was responsible for the pronounced pulmonary hypertension which in turn caused the hypertrophy of the right ventricle.

The short duration of the symptoms and the periodic fever would suggest an infectious process such as that of rheumatic fever, but in the postmortem examination of the heart nothing to support a diagnosis of rheumatic fever was noted. Although thrombi and nodular thickening typical of the healed stages of periarteritis nodosa were noted, these changes were not conspicuous.

SUMMARY

A case in which a nine-year-old Mexican female had pathologic changes restricted to the pulmonary arteries is reported. Pronounced cor pulmonale suggested long-standing pulmonary hypertension. The main changes confined to the arterioles consisted of endothelial proliferation, focal fibrinoid necrosis of the intima, arteritis, subendothelial fibrosis with narrowing and occlusion of the lumen, and recanalization of the obliterated lumen.

Clinical observations suggested congenital heart disease, interatrial septal defect and right ventricular heart failure.

The short duration of the illness suggested an infectious process. However, many of the changes in the arterioles were degenerative in nature and simulated those of arteriosclerosis.

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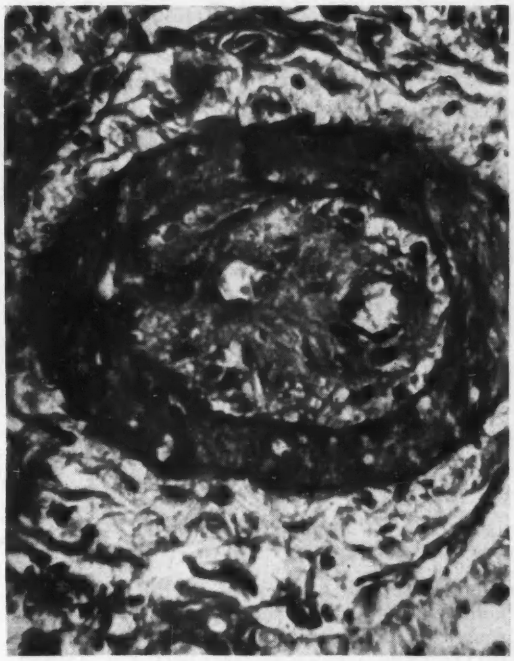

Figure 4. — A small muscular pulmonary artery with obliteration and recanalization of the lumen due to subendothelial fibrous proliferation. (Weigert's stain.)

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California MEDICINE

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Editor, DWIGHT L. WILBUR, M.D. *Assistant to the Editor*, ROBERT F. EDWARDS

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EDITORIALS

C.M.A. and A.M.A. Meetings

Los Angeles, host early last month to meetings of both the California Medical Association and the American Medical Association, proved, as usual, the city's ability to handle large professional groups in splendid fashion.

The C.M.A. meeting, immediately preceding the national gathering, was the first Interim Session of the House of Delegates under the new Constitution and By-Laws. It produced about ten items of new business and gave the House of Delegates a chance to receive proposals which may be mulled and, after calm consideration, voted upon at the next meeting of the House.

Under the Association's new basic operating documents, all new business except proposed amendments to the Constitution is to lie on the table until the next succeeding meeting of the House of Delegates, unless the proposal is entered as an emergency measure and so voted by the House of Delegates. This system has proved its practicability at the December session, where a few items were voted as emergencies and acted upon without delay. Other proposals, not labeled or considered in the emergency category, were referred to the proper reference committee for study and report back to the meeting of the House next April.

Members of the House of Delegates, and all members of the Association, will thus be given a chance to pass on their own comments on proposed measures prior to the next meeting. The reference committees propose to invite comments and suggestions from all interested members and to base their conclusions and recommendations upon the responses.

Reports of these committees will be furnished members of the House of Delegates well in advance of the next meeting, so that the county medical society delegates may discuss all items with their constituents and be prepared to discuss and vote upon all measures when the House next meets.

The full text of all proposals placed before the December meeting will be published in the transcript of the House of Delegates in an early issue of CALIFORNIA MEDICINE. In the current issue will be found the language of several proposed amendments to the Constitution which were introduced at the 1951 Annual Session, to lie on the table for one year. These proposals have likewise been referred to a reference committee and will be subject to report and action at next April's meeting.

As the C.M.A. finished its first Interim Session, the A.M.A. began its fifth meeting of this character. From all reports, especially those of some of the top A.M.A. officials, it appears that the Los Angeles meeting was the best Interim Session to date. It produced a scientific program which has drawn high praise, an exhibit of vast proportions and range, a highly orderly and businesslike session of the House of Delegates and a nonpartisan political program which was nationally broadcast and locally televised.

The political gathering brought together Senator Robert A. Taft of Ohio and Senator Harry F. Byrd of Virginia, both of whom discussed before an audience of more than 7,000 the outlook for the nation in the coming year. While the audience may have expected a controversial discussion between a leading Republican candidate for the presidency and an outspoken Democrat leader, the applause indicated the unanimity of opinion expressed by the two Senators in condemnation of excessive governmental spending and governmental controls. These two outstanding exponents of their parties' policies may well have laid the groundwork for the political struggle of next fall.

Los Angeles may not soon again have the chance to entertain these two functions in the same week but on the basis of its performance last month it is amply capable of doing a magnificent job when and if called upon.

C.P.S. Study Committee

One of the knotty problems brought before the first Interim Session of the C.M.A. House of Delegates last month was the question of how far and in which directions the C.P.S. Study Committee was to go. This special committee, which was set up by action of the 1951 House of Delegates, rendered a preliminary report to the interim session, suggested ways and means of continuing its activities, and requested that funds be made available to carry on economic and actuarial studies upon which to base recommendations for the future of C.P.S.

The House of Delegates approved the preliminary report, including the committee's recommendations, and also approved the proposed appropriation by the Council of up to $40,000 for the studies contemplated.

Objectives of the research to be undertaken will be to study how C.P.S. can be of further service to the people in meeting the growing demand for medical care coverage in employer-employee contracts, in providing for the needs of the agricultural population, and in extension of catastrophe coverage for groups and for persons who are not members of an organization. The studies are expected to cover, in addition, other medical care plans now available to the people of California.

Only with public and professional acceptance can C.P.S. hope to perform a public service. Now that the preliminaries of this important subject have been determined and approved, now that the committee is assured of funds to carry out its projected research, there is every indication that the studies will produce the findings upon which such mutual acceptance may be based.

Letters to the Editor . . .

EDITOR,
CALIFORNIA MEDICINE:

To keep the historical record correct, herewith a memorandum referring to a misstatement — "Los Angeles, honored for the first time by an A.M.A. meeting"—that appeared in an editorial in the November issue of CALIFORNIA MEDICINE.

In year 1911, Los Angeles County Medical Association was host to the 62nd Annual Session of the American Medical Association. The undersigned was secretary of the executive committee that had charge of the arrangements. He compiled a 60-page "Information Booklet." A copy is on file in the Los Angeles County Medical Association library.

California State Journal of Medicine and the *Southern California Practitioner* of year 1911 printed many editorial and other references to the American Medical Association session of 1911, held in Los Angeles. Other references appear in *Journal of the American Medical Association* and the *Bulletin of the Los Angeles County Medical Association.*

The *Bulletin of the Los Angeles County Medical Association* in its issue of March 11, 1912, stated that the balance of the subscription fund for entertainment ($8,857.89) had been turned over to the permanent quarters fund of the Los Angeles County Medical Association. (This balance was made possible by a donation of some $5,000 by the Busch family of Pasadena, for an afternoon entertainment in their sunken gardens off Orange Grove Avenue and by the donation of the Los Angeles Chamber of Commerce in providing transportation to Catalina Island.)

Since year 1911, Los Angeles County Medical Association has added hundreds of names of physicians to its membership roster. It is only proper that on matters historical having to do with medical organization, they be not misinformed.

GEORGE H. KRESS, M.D.

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NOTICES AND REPORTS

Proposed Constitutional Amendments

Following are the proposed amendments to the Constitution of the California Medical Association that were introduced at the 1951 Annual Session. All have been referred to Reference Committee No. 3, which is to make its report upon them available to Delegates at least 30 days before the opening of the 1952 Annual Session in Los Angeles, April 27. California Medical Association members who wish to record opinions on any of the proposed amendments may send them to the chairman of Reference Committee No. 3—Lyle Craig, M.D., 65 North Madison Avenue, Pasadena.

Submitted by Donald Carson, San Francisco:

Resolved, That subparagraph (c) of Section 9, Part B, of Article III of the Constitution be amended to read as follows:

(c) The President, President-Elect, Speaker and Vice-Speaker.

* * *

Submitted by E. T. Remmen, Los Angeles:

Be It Resolved, That Article III, Part A, Section 1 of the Constitution be amended to read as follows:

The House of Delegates shall consist of

(a) Delegates elected by the members of component societies as provided in the By-Laws;

(b) Officers of the Association, as designated in Article VI, Section 1 of this Constitution. Excepting the Secretary-Treasurer and the Editor, they shall have the right to vote.

Anything in the Constitution and By-Laws which is in conflict with the foregoing is hereby repealed.

* * *

Submitted by E. T. Remmen, Los Angeles:

Be It Resolved, That Article III, Part B, Section 11* of the Constitution be amended to read as follows:

(a) District Councilors shall be elected by vote of the delegates from each district in the manner and at the time specified in the By-Laws.

Paragraph (b) is hereby repealed, except that the present Councilors-at-Large shall complete their terms.

*Due to a typographical error, this amendment was introduced as applying to Article III, Part B, Section 9, whereas it is obvious that the author intended it to apply to Section 11.

Anything in the Constitution and By-Laws in conflict with the foregoing is hereby repealed.

* * *

Submitted by E. T. Remmen, Los Angeles:

Be It Resolved, That Article III, Part B, Section 9 of the Constitution shall be amended to read as follows:

The Council shall consist of:

(a) Eleven District Councilors elected from the Councilor districts specified in this Constitution.

(b) The President, President-Elect and Speaker. In addition the Secretary-Treasurer and Editor, but without the right to vote.

Anything in the Constitution and By-Laws which is in conflict with the foregoing is hereby repealed.

* * *

Submitted by E. T. Remmen, Los Angeles:

Be It Resolved, That Article IV, Section 5 of the Constitution be amended to read as follows:

At each regular session of the House of Delegates, the Council shall submit to it an itemized budget stating the proposed expenditures of the Association for the ensuing year. The budget may be altered or revised by the House of Delegates, but must be adopted by the House before adjournment of the session. After its adoption, no expenditures in excess of the amount of the budget item covering the subject of such expenditures may be made in the year covered by the budget by the Association or any of its officers, agents or employees, unless the Council by a three-fourths vote of all voting members shall first approve such excess expenditure by resolution duly adopted, and further provided that in no instance may the Council expend funds in any fiscal year in excess of 25 per cent more than the total amount of the budget without permission of the House of Delegates. Recurring items in the budget (fixed expenditures covering more than one year) shall, when first adopted, be binding as to the subsequent budgets to the extent of commitments or obligations entered into by the Association within authority granted by the House of Delegates or this Constitution or the By-Laws.

Correction, Please!

In the September 1951 issue of CALIFORNIA MEDICINE, page 241, a typographical error in the new By-Laws of the California Medical Association makes it appear that representation of the county societies in the C.M.A. House of Delegates may be considered on a different basis from that actually adopted by the 1951 House of Delegates.

Chapter V, Section 2 of the By-Laws, which was incorrectly printed, should read as follows:

"Commencing with the 1952 regular session of the House of Delegates, each component society shall be entitled to one delegate for each fifty (50) active members or major fraction thereof, according to its membership as of the first day of November of the preceding year; provided, however, that each component society shall be entitled to a minimum of two delegates."

In Memoriam

BALDWIN, BYRON L. Died in an airplane accident near Redmond, Oregon, November 3, 1951, aged 54. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1925. Licensed in California in 1925. Doctor Baldwin was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✤

BANKS, HARRY B. Died in San Francisco, October 29, 1951, aged 54, of carcinoma. Graduate of the University of California Medical School, Berkeley-San Francisco, 1935. Licensed in California in 1935. Doctor Banks was a member of the San Francisco Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✤

BROWN, HUGH L. Died in an airplane accident near Redmond, Oregon, November 3, 1951, aged 47. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1929. Licensed in California in 1929. Doctor Brown was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✤

BULSON, CHARLES H. Died in Napa, November 20, 1951, aged 83. Graduate of Gross Medical College, Denver, 1889. Licensed in California in 1889. Doctor Bulson was a member of the Napa County Medical Society, a life member of the California Medical Association, and a Fellow of the American Medical Association.

✤

BURKETT, RICHARD C. Died in Napa, November 3, 1951, aged 56, of metastatic carcinoma of the liver. Graduate of the University of Illinois College of Medicine, Chicago, 1922. Licensed in California in 1922. Doctor Burkett was a member of the Napa County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✤

FRIEDLANDER, RICHARD D. Died in San Francisco, November 1, 1951, aged 45. Graduate of the University of California Medical School, Berkeley-San Francisco, 1930. Licensed in California in 1930. Doctor Friedlander was a member of the San Francisco Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

GAGE, CLIFTON E. Died in Los Angeles, October 27, 1951, aged 68, of gastrointestinal hemorrhage. Graduate of the College of Physicians and Surgeons, Los Angeles, 1910. Licensed in California in 1910. Doctor Gage was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✤

HADDEN, DAVID. Died in Berkeley, November 17, 1951, aged 76, of coronary thrombosis. Graduate of the Cooper Medical College, San Francisco, 1899. Licensed in California in 1899. Doctor Hadden was a member of the Alameda-Contra Costa Medical Association, the California Medical Association, and the American Medical Association.

✤

JELTE, SAFFORD A. Died in Oakland, November 17, 1951, aged 59, of acute coronary occlusion. Graduate of the University of Arkansas School of Medicine, Little Rock, 1919. Licensed in California in 1919. Doctor Jelte was a member of the Alameda-Contra Costa Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✤

MAYERS, HOWARD D. Died in an automobile accident near San Jose, November 2, 1951, aged 50. Graduate of Northwestern University Medical School, Chicago, 1934. Licensed in California in 1936. Doctor Mayers was a member of the Shasta County Medical Society, the California Medical Association, and the American Medical Association.

✤

MYERS, AUMOND D. Died in an airplane accident near Redmond, Oregon, November 3, 1951, aged 44. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1935. Licensed in California in 1935. Doctor Myers was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✤

NEGLEY, JAMES C. Died in Glendale, October 23, 1951, aged 68, of coronary artery occlusion. Graduate of the University of Michigan Medical School, Ann Arbor, 1910. Licensed in California in 1911. Doctor Negley was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✤

WALKER, JOHN R. Died in Carmel, November 16, 1951, aged 75, of aortic stenosis. Graduate of Barnes Medical College, St. Louis, Missouri, 1898. Licensed in California in 1901. Doctor Walker was a retired member of the Fresno County Medical Society, the California Medical Association, and an Associate Fellow of the American Medical Association.

Questions and Answers about C. P. S.

Question: **While the new Physician Manual proves helpful in billing for services rendered to C.P.S. patients, it has the appearance of being quite expensive. Does C.P.S. have to spend so much money in getting this information to doctors?**

Answer: When 12,000 manuals are produced at once, as in this case, the printing cost for each is quite low. Several bid prices were received from printers and the lowest bid, which was accepted, amounted to only about 30 cents per copy—definitely a reasonable price when the following points are considered: The manual is not only attractive but durable and serviceable; its loose-leaf binding permits insertion of new pages when necessary; it lies flat when opened, permitting easier use; sections are tabbed for quicker reference.

In addition, the Manual will pay for itself by reducing the number of letters between physician members and C.P.S. In the relatively short time since the manual was distributed to doctors' offices, C.P.S. has noticed an appreciable decrease in the number of claim rejections and an even greater decrease in correspondence relative to claims. Surveys show that, including all cost factors, the expense of writing letters ranges from a minimum of 30 cents to as high as $1. Each time the information provided in the Manual eliminates correspondence between physician members and C.P.S. it is helping to pay for itself.

Question: **Who sets the C.P.S. income ceiling?**

Answer: The C.P.S. income ceiling is set by the C.P.S. House of Delegates, which is also the C.M.A. House of Delegates.

At the last annual meeting of the House of Delegates, two resolutions regarding the income ceiling were proposed. One proposed that the ceiling be raised from $3,600 to $4,800. The other proposed that the ceiling be maintained at $3,600. The Resolutions Committee, to which these proposals were referred, then recommended a substitute resolution, as follows: That the ceiling for single persons without dependents be maintained at $3,600 and that the ceiling for family persons be increased from $3,600 to $4,200. This substitute resolution was passed by the House of Delegates.

Question: **What is the intended use of the new green envelopes, marked for the attention of the C.P.S. Medical Director, which have been sent to physician members?**

Answer: While this question was answered in the November issue, the continued misuse of the green envelopes warrants a repeated explanation.

The green envelopes were supplied to physician members to speed the handling of claims *on complicated or unusual procedures.* A saving of time and special medical consideration is effected by having these claims sent directly to the Medical Director—instead of having them routed through the normal processing channels as is done with routine claims.

Experience since their introduction, however, shows that the use of the green envelopes is being misunderstood. Instead of restricting their use to complicated or unusual cases, many physicians are using them for routine bills—thereby retarding consideration of claims which really merit special attention by the Medical Director.

An additional point: When a claim is sent in the green envelope, it should be accompanied by a short report from the physician, describing the particular problem involved in the case.

Question: **Under the *new* two-visit-deductible medical contract, are maternity services on an indemnity basis?**

Answer: Yes. According to the wording of the contract, C.P.S. provides "an allowance of $50 to be applied towards the total cost of all professional prenatal, postnatal and obstetrical services in cases of pregnancy or childbirth" for female employee members who have held the contract for at least nine successive months prior to delivery. As a result, the income ceiling does not apply for professional services in maternity cases. The physician may bill the patient directly for the difference between the C.P.S. allowance and his private fee.

Question: **Is there a difference between the individual family plan and the direct payment program?**

Answer: Yes. The individual family plan is for persons who wish to join C.P.S. but who are not qualified for group enrollment because they are not employed in a group of five or more persons. The direct payment program is for persons who originally were enrolled in a group and who wish to retain C.P.S. membership after they have left the group.

C.P.S. Payments to Physicians

C.P.S. physician members now are receiving payments at 100 per cent of the existing (1949) Fee Schedule for services rendered to C.P.S. patients.

Announcement of the action, effective for services rendered on and after December 1, 1951, was made at the recent interim meeting of the House of Delegates by Dr. Donald Cass, president of the C.P.S. Board of Trustees.

Letters notifying each physician member were immediately dispatched.

Payment of 100 per cent fees was foreshadowed by the introduction of new C.P.S. contracts for beneficiary members in the autumn of 1950. The new contracts, adjusting both rates and benefits, gradually replaced the then existing contracts. Even before contract conversion was completed, the relationship of the new contracts to fee payments was shown last June 1 when fees were raised from 80 to 90 per cent. Now, with conversion largely completed, C.P.S. is able to boost payments to the full amounts listed in the Fee Schedule.

In announcing the action, Dr. Cass paid tribute to the medical profession's "unselfish support of C.P.S." through the years in accepting less-than-normal fees so that the plan, which commenced as a pioneering organization in the field of prepaid health, could gain strength and experience and lay a solid foundation for the future.

The C.P.S. administration, in accordance with a resolution adopted at the last annual meeting of the C.P.S. House of Delegates, is taking steps to have representatives appear at hospital staff meetings to give physicians up-to-date reviews of C.P.S. activities and plans. All hospitals have been requested to inform C.P.S. of regular staff meeting dates, and some meetings now are being programmed.

* * *

Members of the C.P.S. House of Delegates, their alternates and secretaries of county medical societies are now receiving bimonthly reports from the C.P.S. administration. Summarizing important C.P.S. developments, including actions of the C.P.S. Board of Trustees, the reports will be a source of information about C.P.S. not only for the delegates and alternates, but also for the physicians they represent.

NEWS and NOTES

NATIONAL • STATE • COUNTY

LOS ANGELES

Establishment of a **Pacific Tropic Diseases Research Project** with headquarters in the department of infectious diseases at the University of California at Los Angeles School of Medicine was announced recently by Dr. Stafford L. Warren, dean of the medical school.

The project will be directed by Dr. John F. Kessel, professor of infectious diseases and head of the division of parasitology and tropic diseases, U. C. L. A. School of Medicine.

* * *

The Los Angeles Obstetrical and Gynecological Society has announced a special two-day program to be presented February 8 and 9 by a group of nationally known authorities in obstetrics and gynecology. The sessions, which are to be held at the Elks Club, Sixth and Park View, are to open at 9:30 a.m. Reservations must be made not later than February 1. The fee is $15.

* * *

Announcement of the election of Dr. Wilbur Bailey as president and trustee and of Dr. Eric A. Royston as vice-president was made last month by the Los Angeles County Medical Association. They succeed Dr. Richard O. Bullis and Dr. Warren A. Wilson, respectively. Dr. Paul D. Foster was reelected secretary-treasurer and trustee. In addition, Drs. Lyle G. Craig, Warren A. Wilson and Harold R. Witherbee were elected trustees.

SAN DIEGO

Election of Dr. Ralph M. King as president-elect of the San Diego County Medical Society was announced at the November meeting of the organization. Dr. Howard A. Ball was elected treasurer and Dr. W. H. Geistweit, Jr., secretary. Delegates to the California Medical Association are Drs. Douglass H. Batten and Roger C. Isenhour.

SAN FRANCISCO

Dr. Edmund J. Morrissey was named president-elect of the San Francisco Medical Society at its meeting in December. He will take office January 1, 1953, succeeding Dr. Stacy R. Mettier, this year's president. Dr. Roberta F. Fenlon was elected vice-president, Dr. Donald McLean Campbell, secretary-treasurer, and Dr. Herbert C. Moffitt, assistant secretary-treasurer. Elected directors were Dr. Garnett Cheney, retiring president; and Drs. Harold Hand, August Spitalny, Bert L. Halter, Henry Gibbons III, Russell R. Klein and Gerald Gill.

SONOMA

The second annual session of the North Coast Counties **Regional Medical and Surgical Institute** will be held in Santa Rosa, Thursday and Friday, February 14 and 15, 1952, at the high school auditorium. Local arrangements are under the direction of Dr. Horace F. Sharrocks and his committee for postgraduate study, Doctors Leonard W. Hines, William J. Rudee, J. Leslie Spear, R. Dee Robbins, Clifford M. Carlson and A. Morse Bowles, who heads the regional postgraduate study committee, representing the counties of Del Norte, Humboldt, Mendocino, Lake, Napa, Solano, Sonoma, Marin and parts of Contra Costa. The teaching program has been arranged by this committee in conference with Stanford University School of Medicine, Medical Extension.

Program

THURSDAY, FEBRUARY 14, 1952

Chairman, Horace F. Sharrocks, M.D., Sebastopol

8:30- 9:30 a.m.—Registration: Santa Rosa high school auditorium.

9:30-10:30 a.m.—What's New in Medicine, Dwight L. Wilbur, M.D.

10:30-11:30 a.m.—Treatment of Tendon and Nerve Injuries, L. D. Howard Jr., M.D.

11:40-12:30 p.m.—Blood Grouping Including the Rh Problem, William P. Creger, M.D.

12:30- 2:00 p.m.—Luncheon and Round Table Discussion—Chairman, Leonard Hines, M.D., Santa Rosa.

Afternoon Session

Chairman, Wayne P. McKee, M.D., Ferndale

2:00- 3:00 p.m.—Treatment of Burns, L. D. Howard Jr., M.D.

3:10- 4:00 p.m.—Transfusion Reactions, William P. Creger, M.D.

4:10- 5:00 p.m.—Medical Treatment of Peptic Ulcers, Dwight L. Wilbur, M.D.

6:30 p.m.—Dinner Meeting, Sonoma Mission Inn—Toastmaster, Leonard W. Hines, M.D.

Speaker, Hale F. Shirley, M.D.: Behavior Problems in Children.

FRIDAY, FEBRUARY 15, 1952

Morning Session

Chairman, Herbert B. Messinger, M.D., Napa

9:00-10:00 a.m.—What's New in Surgery, Frank Gerbode, M.D.

10:00-11:00 a.m.—Radiation Injuries in Peace and War, William Saunders, M.D., U.S. Veterans Hospital, San Francisco.

11:10-12:00 noon—Common Mistakes in the Treatment of Common Fractures, Donald E. King, M.D.

12:00- 1:45 p.m.—Luncheon and Round Table Discussion—Chairman, Leonard Hines, M.D.

2:00- 3:00 p.m.—Surgical Treatment of Wounds of the Chest, Frank Gerbode, M.D.

3:10- 4:00 p.m.—Orthopedic Problems in the Growing Child, Donald E. King, M.D.

The wives of the doctors attending are being invited to hear the scientific sessions if they wish. The Auxiliary is also planning other events of interest for them.

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Dr. Carl Anderson of Santa Rosa was elected president-elect of the Sonoma County Medical Society at the December meeting, and Dr. Leonard Hines, also of Santa Rosa, was installed as president, succeeding Dr. Horace Shar-

POSTGRADUATE EDUCATION NOTICES

STANFORD UNIVERSITY SCHOOL OF MEDICINE

1952 Postgraduate Course in Ophthalmic Pathology:

MONDAY, FEBRUARY 11:
Afternoon: Normal histology, growth and aging.
Evening: Embryology and developmental anomalies.

TUESDAY, FEBRUARY 12:
Afternoon: Inflammation, injuries and wound healing.
Evening: Surgical pathology and external diseases.

WEDNESDAY, FEBRUARY 13:
Afternoon: Uveitis.
Evening: Cataract.

THURSDAY, FEBRUARY 14:
Afternoon: Glaucoma.
Evening: Vascular lesions and retinopathies.

FRIDAY, FEBRUARY 15:
Afternoon: Tumors (extraocular).
Evening: Tumors (intraocular).

Fee: $50 except for residents in training. Group limited to 20 students. For application and information address inquiries to Office of the Dean, Stanford University School of Medicine, 2398 Sacramento Street, San Francisco 15, Calif.

UNIVERSITY OF CALIFORNIA SCHOOL OF MEDICINE: UNIVERSITY EXTENSION

Symposia on Diseases of the Chest:

Presented through the cooperation of the American College of Chest Physicians and Stanford University, at the request of the California Chapter of the American Academy of General Practice. (Credit approved for 25 hours of instruction.)

JANUARY 16, 23, 30, and FEBRUARY 6, 1952: Wednesday afternoon and evening.

University of California Extension Building, 540 Powell Street, San Francisco. (Place of Dinner and Evening Session to be announced.)

Fee: $25.00.

Postgraduate Courses for Practicing Physicians:

Clinical Endocrinology and Metabolic Diseases, including the non-endocrine application of endocrine substances.

JANUARY 28 through FEBRUARY 1, Toland Hall, University of California Hospital.

Microscopy and Photomicrography: Part 1. The Critical Use of the Microscope.

JANUARY 17 through MARCH 20, Thursday evenings, Laboratory at Medical Center.

Fees appear in detailed programs.

Address inquiries for application and information to Stacy R. Mettier, M.D., Head of Postgraduate Instruction, Medical Extension, University of California Medical Center, San Francisco 22, Calif.

rocks of Sebastopol. Dr. Frank Lones, Santa Rosa, was elected secretary-treasurer to succeed Dr. William J. Rudee who had served in that office for three years. Dr. Rudee, Dr. Carroll B. Andrews of Sonoma, and Dr. John J. Mohrman of Petaluma were elected to the executive committee.

GENERAL

Dr. Max Sadove, head of the department of anesthesiology at the University of Illinois, was elected organizing president of the **Walter Reed Society** and Dr. Clinton H. Thienes, head of the department of pharmacology and toxicology, University of Southern California, was elected a vice-president at the first official meeting of the group held in Los Angeles at the close of the American Medical Association meetings. The society, which is sponsored by the National Society for Medical Research, is composed of persons who have served as "human guinea pigs" in medical research or experimentation under the direction of a qualified scientist.

* * *

Dr. Elmer M. Bingham, health officer for the San Joaquin Local Health District, was elected president of the **California Conference of Local Health Officers** at the conference's fifth annual meeting held in Stockton November 14 to 17. Dr. Bingham succeeds Dr. J. B. Askew, director of the San Diego Health Department.

Serving with Dr. Bingham during the coming year will be Dr. Roy O. Gilbert, Los Angeles County health officer, vice-president, and Dr. James C. Malcolm, Alameda County health officer.

* * *

The policy for **distribution of yellow fever vaccine** from the Rocky Mountain Laboratory of the Public Health Service, which is the only laboratory in this country on the World Health Organization's list of institutions producing approved vaccine, was stated recently by the U.S.P.H.S. Because the vaccine is highly thermolabile and must be stored and transported at a subfreezing temperature, strict control of its handling is required.

1. Shipments of the vaccine are to originate from the Rocky Mountain Laboratory and be routed directly to the user except as provided in 3 below. The vaccine is not to be redistributed.

2. The vaccine will be distributed in the United States to:
Public Health Service facilities.
Department of Defense installations.
Organizations with large numbers of employees going into yellow fever areas.
One health department of state in which a yellow fever clinic of the Public Health Service is not available.

The Epidemiology and Immunization Branch of the Division of Foreign Quarantine is responsible for approving facilities for the receipt of the vaccine, and will conduct necessary investigation to insure compliance with requirements for handling the vaccine.

3. The vaccine may be sold to private concerns, or their agents, to be sent abroad for inoculation of employees in yellow fever areas. It may also be sold to approved foreign governments. Inasmuch as the vaccine is on the restricted commodity list of the Office of International Trade, Department of Commerce, all sales (except sales to Canada and countries of Central and South America) for the purpose of exportation must be approved by that agency. Orders not meeting the requirements of the Office of International Trade will be referred to the administrative officer of the Microbiological Institute.

BOOK REVIEWS

LOW SODIUM DIET—A Manual for the Patient. By Thurman B. Rice, A.M., M.D., Professor of Public Health, Indiana University School of Medicine. Lea & Febiger, Philadelphia, 1951. 103 pages. $2.75.

This book, written by a physician who himself is on a low sodium diet, is an interesting, but superficial discussion of the subject. There are a number of errors which have crept into the book. A few of these may be listed:

Halibut and salmon are listed as high in sodium. These are relatively low (50 mg. sodium per 100 gm.) as compared to sardine and tuna.

On page 21 the author states that "celery, etc., is good," but celery is high in sodium.

On page 26 ice cream is recommended for dessert, but this can be very high in sodium.

On page 50 sherbet is advocated, but even though made with skimmed milk, can be high in sodium.

On page 59 it should be made clear that tomato juice, which is listed under "low sodium" column, should not be canned unless salt-free.

On page 70 there is very little relationship between the fruits and vegetables grouped on the bottom of the page; this is also true of the charts on pages 59-60. For example, one cup of parsnips and squash are allowed, yet on page 60 squash is listed as "very low" and parsnips as "medium."

The tables which give the sodium content per 100 grams food are not as helpful to the patient as if the sodium content per average serving was given. There is a good deal of repetition in the book, but the philosophy is worthwhile, as well as the discussion of sodium in water.

In general, although considerable interesting data are presented, this book does not contribute much more than careful use of the Mead Johnson tables or study of the "Practical Aspects of the Low Sodium Diet," published by the San Francisco Heart Association.

* * *

DISEASE IN INFANCY AND CHILDHOOD. By Richard W. B. Ellis, O.B.E., M.A., M.D., F.R.C.P., Professor of Child Life and Health, University of Edinburgh. The Williams and Wilkins Company, Baltimore, 1951. 695 pages.

Dr. Ellis' intention, stated in his preface, is "primarily to emphasize those features of the young and growing individual which will determine his response to the impact of disease processes, and distinguish this response from the behavior of the adult..." This volume may not fulfill this intent for the average reader. The author further states "this book is not intended as an inclusive work of reference, but rather as an introduction to clinical paediatrics for those who are already familiar with the natural history of disease processes in adult life." "Disease in Infancy and Childhood" is satisfactory for this purpose. The author's economical style makes for easy reading but leads to omissions where the physician less experienced in pediatrics most needs details. Although this book may be read with profit and enjoyment, the busy practitioner will not find it the most useful of currently available works on pediatrics.

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CLINICAL HEART DISEASE. By Samuel A. Levine, M.D., F.A.C.P., Clinical Professor of Medicine, Harvard Medical School; Physician, Peter Bent Brigham Hospital, Boston. Fourth Edition, illustrated. W. B. Saunders Company, Philadelphia, 1951. 556 pages. $7.75.

Levine's new edition brings up to date his well-known text book first published in 1936. The new edition follows the old ones in organization, style and in the intense personal approach to cardiology. The readable style, the illustration with apt clinical examples and sound clinical judgment all combine to make this volume exceedingly valuable to all physicians interested in heart disease. The section on paroxysmal rapid heart action is particularly good and emphasizes the importance of bedside medicine. The chapters on "Bronchial and Other Factors in the Production of Dyspnea," "The Clinical Significance of Systolic Murmur," "The Patient with Heart Disease as a Surgical and Obstetrical Risk," and "Factors Concerning Prognosis in Heart Disease" are particularly valuable.

The section on electrocardiography has been completely re-written and brought up to date with complete description of unipolar and precordial leads.

If one were to criticize this excellent book one might cite the absence of references from which readers may pursue any subject in which they are interested. Without references the reader must accept all statements as personal opinions of the author based on his experience. The book can be highly recommended.

* * *

ATLAS OF NORMAL RADIOGRAPHIC ANATOMY. By Isadore Meschan, M.A., M.D., Professor and Head of the Department of Radiology, University of Arkansas School of Medicine; With the Assistance of R.M.F. Farrer-Meschan, M.B., B.S. (Melbourne, Australia). 1044 illustrations on 362 Figures. W. B. Saunders Company, Philadelphia, 1951. 593 pages. $15.00.

This is a volume of about 600 pages dealing with normal roentgenographic findings. It is designed by the authors as a reference book. Tracings are provided to illustrate the gross anatomy of the individual films projected.

After a chapter on the fundamental background for radiographic anatomy, there are chapters dealing with microscopic and macroscopic aspects of bone, the radiographic anatomy of the upper and lower extremities, the skull and the brain. Then follow chapters on the vertebral column, the respiratory system, the mediastinum, the cardiovascular system, the gastrointestinal tract, the abdomen, and the urogenital tracts.

The information in the chapters dealing with the osseous, urinary and nervous systems is adequate, at least for students and residents. However, the sections on the respiratory, cardiovascular and alimentary systems reveal a lack of the information obtainable by clinical fluoroscopy, and therefore need augmentation in this respect.

The author uses some unusual terms such as "remnant radiation" (page 2). The time of ossification and union of the bony centra shows greater variation than indicated in his tables 1 and 2. The legends on figure 70 might bear further revision.

Most of the diagrams are well done, but several of the roentgenograms would bear replacement by more contrasty or better detailed examples. The printing is clear and the indexing adequate.

* * *

COMPARATIVE PHYSIOLOGY OF THE THYROID AND PARATHYROID. By Walter Fleischmann, M.D., Ph.D., Veterans Administration Hospital, Fort Howard, Maryland; Instructor in Pediatrics, The Johns Hopkins University School of Medicine, Baltimore, Maryland. Charles C. Thomas, Publisher, Springfield, Illinois, 1951. 78 pages. $2.25.

This small volume is a very competent review of the published data on comparative physiology of the thyroid and parathyroid glands. It should be of interest to endocrinologists and to investigators of thyroid and parathryoid function. Dr. Fleischmann reviews the literature showing how early in the cordates evidence can be found of thyroid

activity, follows it through the fish, quoting the studies by Marine and Lenhardt on the development of goiter in fish, and pointing out that no parathyroid activity is discoverable in any forms of life to and through the fishes.

For the first time in the amphibia is found parathyroid gland activity and parathyroidectomy is not difficult in these animals because the glands are not in association with other endocrines. Parathyroidectomy in frogs leads to a drop in blood calcium from 11.5 to 7.7 mgm. per 100 ml. and leads to death of the animal. The book reviews the many studies which have shown the necessity for thyroid tissue or iodine to bring about metamorphosis in the tadpole.

Little is known about thyroid activity in reptiles except that thyroidectomy prolongs the period between moultings, in snakes but does not prevent them, and there is no evidence of parathyroid activity in reptiles. From birds on up through mammals the function of parathyroid tissue seems to be quite closely akin to that in human beings and parathyroidectomy leads to a drop in blood calcium and death from tetany in a few days. Birds are particularly good subjects for studies on parathyroid activity because parathyroidectomy is simple and can be done without disturbing the thyroid gland itself.

It is in mammals particularly that extensive experimental work has been done which can readily be translated into human clinical problems. On reading this small volume through one cannot but be impressed by the great contributions that have been made to the understanding of human physiology through animal experimentation. With the advent of the anti-thyroid drugs and iodine 131 there is hardly a clinical problem arising in human beings upon which much light cannot be shed by carrying out studies on properly selected mammals. It is particularly impressive to note how many of our present accepted clinical procedures, in relation to disease of the thyroid and parathyroid glands, have had their origin in carefully conducted animal experimentation. For a timely review of the entire subject Dr. Fleischmann's book is highly recommended.

* * *

MANUAL THERAPY. By James B. Mennell, M.A., M.D., B.C. (Cantab.), Consulting Physician in Physical Medicine, St. Thomas's Hospital, Vice-President and Hon. Fellow, Chartered Society of Physiotherapy, London, England, Gold Key of the American Congress of Physical Medicine, Gold Key of the American Physical Therapy Association. Charles C. Thomas, Publisher, Springfield, 1951. 64 pages. $2.25.

This type of text has a very limited appeal to physicians in general. Its value is directly applicable to anyone doing a very large amount of physical therapy and using massage as an element of treatment. It reads easily and is very clear. Any student of physical therapy or physician directing his talent towards rehabilitation will find it a very useful and clear picture of massage technique. The text concerns itself primarily with technique and for that reason loses a universal appeal. The indications in value of massage therapy for the treatment of injury or disease of the musculoskeletal system are not discussed.

* * *

METHODS IN MEDICAL RESEARCH—Volume 4. By Maurice B. Vischner, M.D., Editor-in-Chief, Professor and Head, Department of Physiology, University of Minnesota Medical School. The Year Book Publishers, Inc., 200 East Illinois Street, Chicago, 1951. 306 pages. $7.00.

The latest volume in this series continues the high standards of earlier ones. It opens with a brief but precise section, by George Gomori, on histochemical staining methods. The second section (L. B. Flexner, associate editor) is devoted to methods for the estimation of total body water, plasma volume, extracellular fluid volume, and calcium ion concentration; it also deals authoritatively with the use of the flame photometer. The third section (S. P. Quigley) is concerned with studies on gastrointestinal pressures, innervation and secretions. The volume closes with a long section (C. M. Pomerat) on methods of tissue culture.

As was the case in previous volumes, each chapter is written by an appropriate authority; the earlier excellent custom of critical remarks by others has almost disappeared. Details of methods, bibliographies, and indexes to subjects and names appear to be satisfactory. The book is recommended to all medical librarians and to those individuals or groups interested in the designated topics.

* * *

COMMUNITY HEALTH EDUCATION IN ACTION. By Raymond S. Patterson, Ph.D., Director of Health Education, John Hancock Mutual Life Insurance Company, and Beryl J. Roberts, Ed.M., M.P.H., Associate in Health Education, Harvard School of Public Health. The C. V. Mosby Company, St. Louis, Missouri, 1951. 346 pages. $4.50.

In these days of growing appreciation that the physician must teach his patients, as well as dose them, there is at least one chapter of this book, "Education by Word-of-Mouth," which ought to be studied by every doctor, even though it is addressed primarily to persons whose major activity is community health education. Here is given lucid, usable information on the conditions under which patients can be taught and the methods of teaching which will be found most effective. Those of us who are ambitious to improve public relations for the medical profession will find much to help us in other parts of the book as well.

The contents include discussions of what is meant by health education and what health educators do, the basic principles of the learning process, specific advice on lecturing, writing, pamphleteering, radio and movie programs, and ways to appraise these methods and the results obtained through their use.

Without resorting to anecdotes and cute stories, a light touch is maintained throughout the volume, and it makes very easy reading. The authors are skillful in practicing what they preach.

* * *

PRACTICAL CLINICAL PSYCHIATRY—7th Edition. By Edward A. Strecker, A.M., Sc.D., Litt.D., LL.D., M.D., Professor of Psychiatry, School of Medicine, University of Pennsylvania; Franklin G. Ebaugh, M.D., Professor of Psychiatry, University of Colorado, School of Medicine; Jack R. Ewalt, M.D., Professor of Neuro-Psychiatry, University of Texas Medical Branch, Galveston. Section on **Psychologic Problems of Childhood** by Leo Kanner, M.D., Associate Professor of Psychiatry, Johns Hopkins University School of Medicine. The Blakiston Company, Philadelphia, 1951. 506 pages. $7.00.

The seventh edition of this standard textbook does not depart radically from its predecessors, but a good job has been done by the authors in keeping it abreast of recent advances in the field. This has always been an essentially practical book, and as such is well suited to the needs of the medical student. The approach is eclectic, and all points of view are given. The appended chapter on psychopathological problems of childhood by Kanner is well written, and should prove useful to all practitioners of medicine and especially to the pediatrician. In keeping the book up to date some of the simplicity of the earlier editions, a most desirable quality, has been sacrificed, but no doubt the increasing complexity of the field has made this inevitable. The rather scanty attention to the psychoneuroses in distinction to the phychoses makes this book of greater value to the medical student than to the physician, who, if he has chosen psychiatry as his specialty will not find it sufficiently profound, while if in general practice will miss a more complete treatment of the minor reaction types with which he must deal in everyday work.

MEDICAL TREATMENT—Principles and Their Application. Edited by Geoffrey Evans, M.D., F.R.C.P., Consulting Physician, St. Bartholomew's Hospital. The C. V. Mosby Company, St. Louis, 1951. 1398 pages of text and 66 pages of index. $20.00.

This book covers treatment in general practice. The classification is alphabetical, both for the subjects and within the framework of each subject heading. There are a number of disadvantages to this type of classification: these include the separation of related diseases and difficulty in finding subjects or remedies in cross-reference.

The presentation of general principles to serve as a guide to practitioners in their choice of treatment is emphasized and is admirable. There are, however, an omission of detail and too little of the scientific approach—two major criticisms of the book.

The antibiotics are subjected to more modern treatment than the reviewer has seen in most British texts. He cannot let pass, however, such statements as (page 32) "At present penicillin must be injected and precautions against sepsis are necessary. Outside hospitals, therefore, and also for reasons of economy, sulphonamides should be preferred when they are likely to be effective."

In the whole field of bone disease (page 128) only two subjects are considered; osteoporosis of the spine and Paget's disease. A total of five pages is given to these, less than half of which is devoted to treatment (and this is inadequate). If one turns through half the book to page 609, one will find some further discussion under the heading of parathyroid disease.

Despite its limited information, this is a practical, common-sense book which is generally up-to-date with regard to clinical practice. It may be compared to such American volumes as "Practical Therapeutics" by Rehfuss and Price and "Current Therapy" by Conn. It offers less than these volumes, however, and falls short of them in completeness and detail. To the American practitioner it can serve, therefore, only as an additional reference.

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A HISTORY OF NURSING. By Gladys Sellew, Ph.D., R.N., Chairman of Department of Sociology and Social Work, Rosary College, River Forest, Illinois; and C. J. Nuesse, Ph.D., Assistant Professor of Sociology, The Catholic University of America, Washington, D. C. Second Edition. The C. V. Mosby Company, St. Louis, 1951. 437 pages. $3.75.

This book will be helpful to student nurses in appreciating that nursing services are closely related to all branches of human culture.

Beginning with care of the sick among primitive people and continuing through World War II, the authors show the interrelatedness of social, economic, religious and scientific advances upon nursing.

The evolution and expansion of professional nursing around the world is developed with special emphasis upon the forces that have influenced professional nursing in the United States. Graduate nurses will also find this book inspiring and most useful as a reference. It is an excellent text for the nursing instructor.

The revised edition includes much new material, especially the chapters dealing with contemporary American problems in nursing, and includes nursing trends outside the United States.

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THE SPECIALTIES IN GENERAL PRACTICE. Edited by Russell L. Cecil, M.D., Professor of Clinical Medicine, Emeritus, Cornell University Medical College, New York. W. B. Saunders Company, Philadelphia, 1951. 818 pages. $14.50.

This book could be useful to many general practitioners, younger surgeons, internists and others who have had their training in the cloistered halls of the hospital and are thoroughly familiar with sickle-cell anemia but not with dermatitis from cosmetics, or who are familiar with all the aspects of an acute bowel obstruction but are unfamiliar with warts around the fingernails. The book is well illustrated. Some of the illustrations are new although many of them are repeated from former publications. I suppose an illustration is just as good if we have seen it before but it gets tiresome seeing your old friends turn up again like this. The book is well indexed.

This volume attempts to present the diagnostic criteria and the most accepted form of therapy in the minor and common ailments in a series of special fields. The sections are not of equal value. Unquestionably the best section in the book is the one on psychiatry. It also appears to be the only one that was written specifically for this volume and is not only worth the reading but is interesting. The section on pediatrics is quite unsatisfactory. It is primarily a discussion of feeding and immunizing the normal infant with a few pages on the age of election for operations. The two sections on orthopedic surgery and fractures and dislocations seem to be quite satisfactory and much superior to a recent volume on office and minor orthopedics. Even in these sections much valuable material has been left out—only one method of treating a fracture of the clavicle is described which the reviewer's personal experience would indicate is far from applicable in all cases. The section on diseases of the anus, rectum and colon is quite satisfactory, whereas the sections on gynecology and obstetrics seem to be quite routine. The three sections on ophthalmology, diseases of the nose and throat, and diseases of the larynx, bronchi and esophagus are satisfactory for the brevity required of them but the descriptions of such procedures as tonsillectomy seem neither sufficient to instruct one unfamiliar with the procedure nor adequate to refresh the memory of one who had become rusty. The reviewer wonders whether the section on surgery had been brought up to date. The author suggests that surgical excision of warts is a satisfactory procedure, whereas most schools and texts are teaching other methods. Also, this section recommends that animal and human bites be treated by fuming nitric acid, a procedure certainly not in accordance with current teaching. The section on urology is satisfactory except that the charts of symptoms, abnormalities and diseases seems rather unclear and would be more satisfactory with more explanation.

For the physician who wants to invest in only a single volume this book would probably be more satisfactory than any other volume of this nature that has come to the reviewer's attention. However, most physicians would be dissatisfied with the brevity and probably most would prefer a textbook on each of the fields covered.

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INCONTINENCE IN OLD PEOPLE. By John C. Brocklehurst, M.D., Major R.A.M.C., formerly Christine Hansen Research Fellow in the University of Glasgow. E. & S. Livingstone, Ltd., 16 & 17 Teviot Place, Edinburgh, 1951. 191 pages. $6.50. (Distributed by Williams and Wilkins Co., Baltimore.)

This monograph from Scotland, which reviews but does not significantly add to or interpret the previous work on bladder physiology and dysfunction, can be recommended for perusal by urologists but is of less value to the general physician. Most of the conclusions regarding treatment are negative, in spite of various experiments on small groups of incontinent senile patients which showed that the main predisposing factor was a lesion of the central nervous system from senile degeneration or specific organic disease which caused an uninhibited neurogenic bladder. In the conclusion, the author offers a molded bed as his contribution to the care of the aged incontinent patient.